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Tyr Phe Pro Val Gly Pro Gly Thr Gly Phe Leu Tyr Leu Val Asn 65 70 75

Leu Tyr Phe Leu Tyr Gln Tyr Ser Thr Arg Leu Glu Thr Gly Ala 80 85 90

Phe Asp Gly Arg Pro Ala Asp Tyr Leu Phe Met Leu Leu Phe Asn 95 100 105

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Trp Ile Cys Ile Val Ile Thr Gly Leu Ala Met Asp Met Gln Leu
Leu Met Ile Pro Leu Ile Met Ser Val Leu Tyr Val Trp Ala Gln
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Leu Asn Arg Asp Met Ile Val Ser Phe Trp Phe Gly Thr Arg Phe
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Lys Ala Cys Tyr Leu Pro Trp Val Ile Leu Gly Phe Asn Tyr Ile
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Ile Gly Gly Ser Val Ile Asn Glu Leu Ile Gly Asn Leu Val Gly
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His Leu Tyr Phe Phe Leu Met Phe Arg Tyr Pro Met Asp Leu Gly
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Gly Arg Asn Phe Leu Ser Thr Pro Gln Phe Leu Tyr Arg Trp Leu
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                                                         210
Pro Ser Arg Arg Gly Gly Val Ser Gly Phe Gly Val Pro Pro Ala
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Asn Trp Gly Gln Gly Phe Arg Leu Gly Asp Gln
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<211> 1373

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<213> Homo sapiens

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<211> 367

<212> PRT

<213> Homo sapiens

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Asp Phe Val Glu Gln Lys Cys Glu Val Asn Cys Lys Gly Gly His
35 40 45

Val Ile Thr Pro Gly Ser Pro Glu Pro Val Ile Leu Val Ala Cys 50 55 60

Val Pro Leu Val Phe Asp Asp Glu Glu Glu Ser Lys Leu Thr Tyr
65 70 75

Thr Glu Ile His Gln Glu Tyr Lys Glu Leu Val Glu Lys Leu 80 85 90

Glu Gly Tyr Leu Lys Glu Ile Gly Ile Asn Glu Asp Gln Phe Gln 95 100 105

Glu Ala Cys Thr Ser Pro Leu Ala Lys Thr His Thr Ser Gln Ala
110 115 120

Ile Leu Gln Pro Val Leu Ala Ala Glu Asp Phe Thr Ile Phe Lys 125 130 135

Ala Met Met Val Gl<br/>n Lys Asn Ile Glu Met Gl<br/>n Leu Gl<br/>n Ala Ile 140  $\phantom{000}$  145  $\phantom{000}$  150

Arg Ile Ile Gln Glu Arg Asn Gly Val Leu Pro Asp Cys Leu Thr Asp Gly Ser Asp Val Val Ser Asp Leu Glu His Glu Glu Met Lys 180 Ile Leu Arg Glu Val Leu Arg Lys Ser Lys Glu Glu Tyr Asp Gln 190 Glu Glu Glu Arg Lys Arg Lys Gln Leu Ser Glu Ala Lys Thr Glu Glu Pro Thr Val His Ser Ser Glu Ala Ala Ile Met Asn Asn 215 Ser Gln Gly Asp Gly Glu His Phe Ala His Pro Pro Ser Glu Val Lys Met His Phe Ala Asn Gln Ser Ile Glu Pro Leu Gly Arg Lys 245 250 255 Val Glu Arg Ser Glu Thr Ser Ser Leu Pro Gln Lys Gly Leu Lys 260 Ile Pro Gly Leu Glu His Ala Ser Ile Glu Gly Pro Ile Ala Asn Leu Ser Val Leu Gly Thr Glu Glu Leu Arg Gln Arg Glu His Tyr 295 Leu Lys Gln Lys Arg Asp Lys Leu Met Ser Met Arg Lys Asp Met 310 315 Arg Thr Lys Gln Ile Gln Asn Met Glu Gln Lys Gly Lys Pro Thr 320 325 330 Gly Glu Val Glu Glu Met Thr Glu Lys Pro Glu Met Thr Ala Glu Glu Lys Gln Thr Leu Leu Lys Arg Arg Leu Leu Ala Glu Lys Leu

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<212> PRT

<213> Homo sapiens

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Ser Ser Arg Ile Leu Leu Val Lys Tyr Ser Ala Asn Glu Glu Asn 35 40 45

Lys Tyr Asp Tyr Leu Pro Thr Thr Val Asn Val Cys Ser Glu Leu 50 55 60

Val Lys Leu Val Phe Cys Val Leu Val Ser Phe Cys Val Ile Lys
. 65 70 70

Lys Asp His Gln Ser Arg Asn Leu Lys Tyr Ala Ser Trp Lys Glu 80 85 90

Phe Ser Asp Phe Met Lys Trp Ser Ile Pro Ala Phe Leu Tyr Phe 95 100 105

Leu Asp Asn Leu Ile Val Phe Tyr Val Leu Ser Tyr Leu Gln Pro 110 115 120

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Trp	Ala	ser	Leu	1 Leu 155	Thr	Leu	Phe	Leu	Ser 160		· Val	Ala	Let	165
Ala	Gly	Thr	Lys	Thr 170	Leu	Gln	His	Asn	Leu 175		Gly	Arg	GlZ	Phe 180
His	His	Asp	Ala	Phe 185	Phe	Ser	Pro	Ser	Asn 190	Ser	Cys	Leu	Leu	Phe 195
Arg	Ser	Glu	Cys	Pro 200	Arg	Lys	Asp	Asn	Cys 205	Thr	Ala	Lys	Glu	Trp 210
Thr	Phe	Pro	Glu	Ala 215	Lys	Trp	Asn	Thr	Thr 220	Ala	Arg	Val	Phe	Ser 225
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Phe	Ile	Ser	Ser	Met 245	Ala	Asn	Ile	Tyr	Asn 250	Glu	Lys	Ile	Leu	Lys 255
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				Arg 290					295					300
				Phe 305					310					315
				Val 320					325					330
				Met 335					340					345
				Val 350					355					360
Leu				365					370					375
Ser				380					385					390
Arg .				395					400					405
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<213> Homo sapiens

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Ala Ser Ala Asn Pro Pro Gly Pro Ala Trp Val Ala Leu Cys Pro 35 40 45

Gly Ser Ser Ser Pro Arg Pro Trp Pro Ser Leu Pro Thr Ser Ser 50 55 60

Ser Gly Ser Cys Pro Thr Ser His Thr Ala Arg Pro Ile Gly Thr  $65 \hspace{1cm} 70 \hspace{1cm} 75$ 

Cys Phe Ser Ile Ala Ser Leu Lys Gln Trp Ser Arg Val Ser Met 80 85 90

Phe Pro Thr Arg Leu Ser Pro Cys Ser Ser Ala Thr Glu Gln Thr 95 100 . 105

Glu Arg Asp Ser Ala Thr Ala Tyr Arg Met Thr Val Glu Val Leu 115 Gly Thr Val Leu Gly Thr Ala Ile Gln Gly Gln Ile Val Gly Gln 125 Ala Asp Thr Pro Cys Phe Gln Asp Phe Asn Ser Ser Thr Val Ala Ser Gln Ser Ala Asn His Thr His Gly Thr Thr Ser His Arg Glu Thr Gln Lys Ala Tyr Leu Leu Ala Ala Gly Val Ile Val Cys Ile 170 175 180 Tyr Ile Ile Cys Ala Val Ile Leu Ile Leu Gly Val Arg Glu Gln Arg Glu Pro Tyr Glu Ala Gln Gln Ser Glu Pro Ile Ala Tyr Phe 200 205 Arg Gly Leu Arg Leu Val Met Ser His Gly Pro Tyr Ile Lys Leu 215 Ile Thr Gly Phe Leu Phe Thr Ser Leu Ala Phe Met Leu Val Glu Gly Asn Phe Val Leu Phe Cys Thr Tyr Thr Leu Gly Phe Arg Asn Glu Phe Gln Asn Leu Leu Leu Ala Ile Met Leu Ser Ala Thr Leu 265 Thr Ile Pro Ile Trp Gln Trp Phe Leu Thr Arg Phe Gly Lys Lys 275 280 Thr Ala Val Tyr Val Gly Ile Ser Ser Ala Val Pro Phe Leu Ile 290 295 300 Leu Val Ala Leu Met Glu Ser Asn Leu Ile Ile Thr Tyr Ala Val Ala Val Ala Ala Gly Ile Ser Val Ala Ala Ala Phe Leu Pro 320 Trp Ser Met Leu Pro Asp Val Ile Asp Asp Phe His Leu Lys Gln Pro His Phe His Gly Thr Glu Pro Ile Phe Phe Ser Phe Tyr Val 350 355 Phe Phe Thr Lys Phe Ala Ser Gly Val Ser Leu Gly Ile Ser Thr 365 370 375 Leu Ser Leu Asp Phe Ala Gly Tyr Gln Thr Arg Gly Cys Ser Gln Pro Glu Arg Val Lys Phe Thr Leu Asn Met Leu Val Thr Met Ala Pro Ile Val Leu Ile Leu Leu Gly Leu Leu Phe Lys Met Tyr 410 415 420

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Ser Thr Glu Leu Ala Ser Ile Leu 455

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<211> 571

<212> DNA

<213> Homo sapiens

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<211> 266

<212> PRT

<213> Homo sapiens

<400> 23

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Val Ile Trp Thr Ser Ala Ala Phe Ile Phe Ser Tyr Ile Thr Ala
20 25 30

Val Thr Leu His His Ile Asp Pro Ala Leu Pro Tyr Ile Ser Asp 35 40 45

Thr Gly Thr Val Ala Pro Glu Lys Cys Leu Phe Gly Ala Met Leu 50 55 60

Asn Ile Ala Ala Val Leu Cys Ile Ala Thr Ile Tyr Val Arg Tyr
65 70 75

Lys Gln Val His Ala Leu Ser Pro Glu Glu Asn Val Ile Ile Lys 80 85 90

Leu Asn Lys Ala Gly Leu Val Leu Gly Ile Leu Ser Cys Leu Gly
95 100

Leu Ser Ile Val Ala Asn Phe Gln Lys Thr Thr Leu Phe Ala Ala 110 115 120

His Val Ser Gly Ala Val Leu Thr Phe Gly Met Gly Ser Leu Tyr 125 130 135

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Met Phe Val Gln Thr Ile Leu Ser Tyr Gln Met Gln Pro Lys Ile
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 His Gly Lys Gln Val Phe Trp Ile Arg Leu Leu Val Ile Trp
 Cys Gly Val Ser Ala Leu Ser Met Leu Thr Cys Ser Ser Val Leu
                  170
                                      175
 His Ser Gly Asn Phe Gly Thr Asp Leu Glu Gln Lys Leu His Trp
                                      190
 Asn Pro Glu Asp Lys Gly Tyr Val Leu His Met Ile Thr Thr Ala
                                      205
                                                          210
 Ala Glu Trp Ser Met Ser Phe Ser Phe Phe Gly Phe Phe Leu Thr
                 215
                                      220
 Tyr Ile Arg Asp Phe Gln Lys Ile Ser Leu Arg Val Glu Ala Asn
                                      235
 Leu His Gly Leu Thr Leu Tyr Asp Thr Ala Pro Cys Pro Ile Asn
 Asn Glu Arg Thr Arg Leu Leu Ser Arg Asp Ile
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gagcggagat cctcaaacgg cctagtgctt cgcgcttccg gagaaaatca 150
gcggtctaat taattcctct ggtttgttga agcagttacc aagaatcttc 200
aaccetttee cacaaaaget aattgagtae aegtteetgt tgagtacaeg 250
ttcctgttga tttacaaaag gtgcaggtat gagcaggtct gaagactaac 300
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<211> 40

<212> DNA

<213> Artificial Sequence

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<223> Synthetic oligonucleotide probe
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gactgccccg cgggcggaga ctgggctcca ccgaggaggc tggaggcagg 200
tegetgtggt teeceteega eetggeagag etgegggage tetetgaggt 250
ccttcgagag taccggaagg agcaccaggc ctacgtgttc ctgctcttct 300
geggegeeta cetetacaaa cagggetttg ceateceegg etecagette 350
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<210> 28

<211> 264

<212> PRT

<213> Homo sapiens

<400> 28

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Phe Ala Leu Tyr Leu Leu Ser Thr Arg Leu Pro Arg Gly Arg Arg 20 25 30

Leu Gly Ser Thr Glu Glu Ala Gly Gly Arg Ser Leu Trp Phe Pro 35 40 45

Ser Asp Leu Ala Glu Leu Arg Glu Leu Ser Glu Val Leu Arg Glu 50 55 60

Tyr Arg Lys Glu His Gln Ala Tyr Val Phe Leu Leu Phe Cys Gly 65 70 75

Ala Tyr Leu Tyr Lys Gln Gly Phe Ala Ile Pro Gly Ser Ser Phe 80 85 90

Leu Asn Val Leu Ala Gly Ala Leu Phe Gly Pro Trp Leu Gly Leu 95 100 105

Leu Leu Cys Cys Val Leu Thr Ser Val Gly Ala Thr Cys Cys Tyr
110 115 120

Leu Leu Ser Ser Ile Phe Gly Lys Gln Leu Val Val Ser Tyr Phe 125 130 135

Pro Asp Lys Val Ala Leu Leu Gln Arg Lys Val Glu Glu Asn Arg

Asn Ser Leu Phe Phe Phe Leu Leu Phe Leu Arg Leu Phe Pro Met 155 160 165

Thr Pro Asn Trp Phe Leu Asn Leu Ser Ala Pro Ile Leu Asn Ile 170 175 180

Pro Ile Val Gln Phe Phe Phe Ser Val Leu Ile Gly Leu Ile Pro 185 190 195

Tyr Asn Phe Ile Cys Val Gln Thr Gly Ser Ile Leu Ser Thr Leu 200 205 210

Thr Ser Leu Asp Ala Leu Phe Ser Trp Asp Thr Val Phe Lys Leu 215 220 225

Leu Ala Ile Ala Met Val Ala Leu Ile Pro Gly Thr Leu Ile Lys 230 235

Asn His Ile His Ser Arg Lys Asp Thr 260

<210> 29

<211> 1292

<212> DNA

<213> Homo sapiens

<400> 29

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<210> 30

<211> 347

<212> PRT

<213> Homo sapiens

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Met Asp Leu Ala Ala Asn Glu Ile Ser Ile Tyr Asp Lys Leu Ser 1 5 10 15

Glu Thr Val Asp Leu Val Arg Gln Thr Gly His Gln Cys Gly Met 20 25 30

Ser Glu Lys Ala Ile Glu Lys Phe Ile Arg Gln Leu Leu Glu Lys 35 40 45

Asn Glu Pro Gln Arg Pro Pro Pro Gln Tyr Pro Leu Leu Ile Val 50 55 60

Val Tyr Lys Val Leu Ala Thr Leu Gly Leu Ile Leu Leu Thr Ala 65 70 75

Tyr Phe Val Ile Gln Pro Phe Ser Pro Leu Ala Pro Glu Pro Val 80 85 90

Leu Ser Gly Ala His Thr Trp Arg Ser Leu Ile His His Ile Arg 95 100 105

Leu Met Ser Leu Pro Ile Ala Lys Lys Tyr Met Ser Glu Asn Lys 110 115 120

Gly Val Pro Leu His Gly Gly Asp Glu Asp Arg Pro Phe Pro Asp 125 130 135

Phe Asp Pro Trp Trp Thr Asn Asp Cys Glu Gln Asn Glu Ser Glu 140 145

Pro Ile Pro Ala Asn Cys Thr Gly Cys Ala Gln Lys His Leu Lys 155 160 165

Val Met Leu Leu Glu Asp Ala Pro Arg Lys Phe Glu Arg Leu His 170 175 180

Pro Leu Val Ile Lys Thr Gly Lys Pro Leu Leu Glu Glu Glu Ile 185 190 195

Gln His Phe Leu Cys Gln Tyr Pro Glu Ala Thr Glu Gly Phe Ser 200 205 210

Glu Gly Phe Phe Ala Lys Trp Trp Arg Cys Phe Pro Glu Arg Trp 215 220 225

Phe Pro Phe Pro Tyr Pro Trp Arg Arg Pro Leu Asn Arg Ser Gln 230 235 240

Met Leu Arg Glu Leu Phe Pro Val Phe Thr His Leu Pro Phe Pro 245 250 255

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Lys Asp Ala Ser Leu Asn Lys Cys Ser Phe Leu His Pro Glu Pro
Val Val Gly Ser Lys Met His Lys Met Pro Asp Leu Phe Ile Ile
                                                         285
                                    280
Gly Ser Gly Glu Ala Met Leu Gln Leu Ile Pro Pro Phe Gln Cys
                                                         300
Arg Arg His Cys Gln Ser Val Ala Met Pro Ile Glu Pro Gly Asp
Ile Gly Tyr Val Asp Thr Thr His Trp Lys Val Tyr Val Ile Ala
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Glu Leu

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<213> Homo sapiens

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<210> 32 <211> 3531 <212> DNA <213> Homo sapiens

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<210> 33

<211> 1003

<212> PRT

<213> Homo sapiens

<400> 33

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Met Ser Gly Phe Trp Asn Ala Cys Tyr Asp Met Leu Met Ser Ser 20 25 30

Gly Gln Arg Arg Gln Trp Glu Arg Ala Gln Ser Arg Arg Ala Phe
35 40 45

Gln Glu Leu Val Leu Glu Pro Ala Gln Arg Arg Ala Arg Leu Glu 50 55 60

Gly Leu Arg Tyr Thr Ala Val Leu Lys Gln Gln Ala Thr Gln His
65 70 75

Ser Met Ala Leu Leu His Trp Gly Ala Leu Trp Arg Gln Leu Ala 80 85 90

Ser Pro Cys Gly Ala Trp Ala Leu Arg Asp Thr Pro Ile Pro Arg 95 100 105

Trp Lys Leu Ser Ser Ala Glu Thr Tyr Ser Arg Met Arg Leu Lys 110 115 120

Leu Val Pro Asn His His Phe Asp Pro His Leu Glu Ala Ser Ala 125 130 135

Leu Arg Asp Asn Leu Gly Glu Val Pro Leu Thr Pro Thr Glu Glu 140 145 150

Ala Ser Leu Pro Leu Ala Val Thr Lys Glu Ala Lys Val Ser Thr 155 160 165

Pro Pro Glu Leu Gln Glu Asp Gln Leu Gly Glu Asp Glu Leu 170 175 180

Ala Glu Leu Glu Thr Pro Met Glu Ala Ala Glu Leu Asp Glu Gln
185 190 195

Arg Glu Lys Leu Val Leu Ser Ala Glu Cys Gln Leu Val Thr Val 200 205 210

Val Ala Val Val Pro Gly Leu Leu Glu Val Thr Thr Gln Asn Val 215 220 225

Tyr Phe Tyr Asp Gly Ser Thr Glu Arg Val Glu Thr Glu Glu Gly 230 235 240

Ile Gly Tyr Asp Phe Arg Arg Pro Leu Ala Gln Leu Arg Glu Val 245 250 255

His Leu Arg Arg Phe Asn Leu Arg Arg Ser Ala Leu Glu Leu Phe 260 265 270

Phe	∶Il∈	e Asp	Glr	1 Ala 275	a Asn	туг	Phe	: Leu	Asn 280		Pro	Cys	Lys	Val 285
Gly	Thr	Thr	Pro	Val 290	Ser	Ser	Pro	Ser	Gln 295		Pro	Arg	Pro	Gln 300
Pro	Gly	Pro	Ile	9 Pro 305	Pro	His	Thr	Gln	Val 310		Asn	Gln	. Val	. Tyr 315
Ser	Trp	Leu	Let	Arg 320	Leu	Arg	Pro	Pro	Ser 325		Gly	Tyr	Leu	Ser 330
Ser	Arg	Ser	Pro	Gln 335	Glu	Met	Leu	Arg	Ala 340	Ser	Gly	Leu	Thr	Gln 345
Lys	Trp	Val	Gln	Arg 350	Glu	Ile	Ser	Asn	Phe 355	Glu	Tyr	Leu	Met	Gln 360
Leu	Asn	Thr	Ile	Ala 365	Gly	Arg	Thr	Tyr	Asn 370	Asp	Leu	Ser	Gln	Tyr 375
Pro	Val	Phe	Pro	Trp 380	Val	Leu	Gln	Asp	Tyr 385	Val	Ser	Pro	Thr	Leu 390
Asp	Leu	Ser	Asn	Pro 395	Ala	Val	Phe	Arg	Asp 400	Leu	Ser	Lys	Pro	Ile 405
Gly	Val	Val	Asn	Pro 410	Lys	His	Ala	Gln	Leu 415	Val	Arg	Glu	Lys	Tyr 420
Glu	Ser	Phe	Glu	Asp 425	Pro	Ala	Gly	Thr	Ile 430	Asp	Lys	Phe	His	Tyr 435
Gly	Thr	His	Tyr	Ser 440	Asn	Ala	Ala	Gly	Val 445	Met	His	Tyr	Leu	Ile 450
Arg	Val	Glu	Pro	Phe 455	Thr	Ser	Leu	His	Val 460	Gln	Leu	Gln	Ser	Gly 465
Arg	Phe	Asp	Суз	Ser 470	Asp	Arg	Gln	Phe	His 475	Ser	Val	Ala	Ala	Ala 480
Trp	Gln	Ala	Arg	Leu 485	Glu	Ser	Pro	Ala	Asp 490	Val	Lys	Glu	Leu	Ile 495
Pro	Glu	Phe	Phe	Tyr 500	Phe	Pro	Asp	Phe	Leu 505	Glu	Asn	Gln	Asn	Gly 510
Phe	Asp	Leu	Gly	Cys 515	Leu	Gln	Leu	Thr	Asn 520	Glu	Lys	Val	Gly	Asp 525
Val	Val	Leu	Pro	Pro 530	Trp	Ala	Ser	Ser	Pro 535	Glu	Asp	Phe	Ile	Gln 540
Gln	His	Arg	Gln	Ala 545	Leu	Glu	Ser	Glu	Tyr 550	Val	Ser	Ala	His	Leu 555
His	Glu	Trp	Ile	Asp 560	Leu	Ile	Phe	Gly	Tyr 565	Lys	Gln	Arg	Gly	Pro 570
Ala	Ala	Glu	Glu	Ala 575	Leu	Asn	Val	Phe	Tyr 580	Tyr	Cys	Thr	Tyr	Glu 585

Gly Ala Val Asp Leu Asp His Val Thr Asp Glu Arg Glu Arg Lys Ala Leu Glu Gly Ile Ile Ser Asn Phe Gly Gln Thr Pro Cys Gln Leu Leu Lys Glu Pro His Pro Thr Arg Leu Ser Ala Glu Glu Ala 620 Ala His Arg Leu Ala Arg Leu Asp Thr Asn Ser Pro Ser Ile Phe 640 Gln His Leu Asp Glu Leu Lys Ala Phe Phe Ala Glu Val Thr Val 650 655 Ser Ala Ser Gly Leu Leu Gly Thr His Ser Trp Leu Pro Tyr Asp Arg Asn Ile Ser Asn Tyr Phe Ser Phe Ser Lys Asp Pro Thr Met 685 Gly Ser His Lys Thr Gln Arg Leu Leu Ser Gly Pro Trp Val Pro Gly Ser Gly Val Ser Gly Gln Ala Leu Ala Val Ala Pro Asp Gly Lys Leu Leu Phe Ser Gly Gly His Trp Asp Gly Ser Leu Arg Val 730 Thr Ala Leu Pro Arg Gly Lys Leu Leu Ser Gln Leu Ser Cys His 745 Leu Asp Val Val Thr Cys Leu Ala Leu Asp Thr Cys Gly Ile Tyr 755 Leu Ile Ser Gly Ser Arg Asp Thr Thr Cys Met Val Trp Arg Leu Leu His Gln Gly Gly Leu Ser Val Gly Leu Ala Pro Lys Pro Val 795 Gln Val Leu Tyr Gly His Gly Ala Ala Val Ser Cys Val Ala Ile Ser Thr Glu Leu Asp Met Ala Val Ser Gly Ser Glu Asp Gly Thr 820 Val Ile Ile His Thr Val Arg Arg Gly Gln Phe Val Ala Ala Leu 830 835 840 Arg Pro Leu Gly Ala Thr Phe Pro Gly Pro Ile Phe His Leu Ala 850 Leu Gly Ser Glu Gly Gln Ile Val Val Gln Ser Ser Ala Trp Glu 860 Arg Pro Gly Ala Gln Val Thr Tyr Ser Leu His Leu Tyr Ser Val Asn Gly Lys Leu Arg Ala Ser Leu Pro Leu Ala Glu Gln Pro Thr 890 895 900

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Ala Leu Thr Val Thr Glu Asp Phe Val Leu Leu Gly Thr Ala Gln
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 Cys Ala Leu His Ile Leu Gln Leu Asn Thr Leu Leu Pro Ala Ala
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 Pro Pro Leu Pro Met Lys Val Ala Ile Arg Ser Val Ala Val Thr
                  935
                                      940
                                                          945
 Lys Glu Arg Ser His Val Leu Val Gly Leu Glu Asp Gly Lys Leu
                                      955
 Ile Val Val Ala Gly Gln Pro Ser Glu Val Arg Ser Ser Gln
                 965
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<213> Homo sapiens

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Pro Gly Leu Met Cys Val Phe Gln Gly Tyr Ser Ser Lys Gly Leu 35 40 45

Ile Gln Arg Ser Val Phe Asn Leu Gln Ile Tyr Gly Val Leu Gly 50 55 60

Leu Phe Trp Thr Leu Asn Trp Val Leu Ala Leu Gly Gln Cys Val  $\phantom{-}65\phantom{0}\phantom{0}70\phantom{0}$  75

Leu Ala Gly Ala Phe Ala Ser Phe Tyr Trp Ala Phe His Lys Pro 80 85 90

Gln Asp Ile Pro Thr Phe Pro Leu Ile Ser Ala Phe Ile Arg Thr 95 100 105

Leu Arg Tyr His Thr Gly Ser Leu Ala Phe Gly Ala Leu Ile Leu 110 115 120

Thr Leu Val Gln Ile Ala Arg Val Ile Leu Glu Tyr Ile Asp His 125 130 135

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  Leu Asn Arg Asn Ala Tyr Ile Met Ile Ala Ile Tyr Gly Lys Asn
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  Phe Cys Val Ser Ala Lys Asn Ala Phe Met Leu Leu Met Arg Asn
                  185
  Ile Val Arg Val Val Val Leu Asp Lys Val Thr Asp Leu Leu
                  200
                                      205
  Phe Phe Gly Lys Leu Leu Val Val Gly Gly Val Gly Val Leu Ser
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  Phe Phe Phe Ser Gly Arg Ile Pro Gly Leu Gly Lys Asp Phe
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  Lys Ser Pro His Leu Asn Tyr Tyr Trp Leu Pro Ile Met Thr Ser
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 Ile Leu Gly Ala Tyr Val Ile Ala Ser Gly Phe Phe Ser Val Phe
 Gly Met Cys Val Asp Thr Leu Phe Leu Cys Phe Leu Glu Asp Leu
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 Glu Arg Asn Asn Gly Ser Leu Asp Arg Pro Tyr Tyr Met Ser Lys
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 Ser Leu Leu Lys Ile Leu Gly Lys Lys Asn Glu Ala Pro Pro Asp
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 Asn Lys Lys Arg Lys Lys
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Cys Ala Cys Lys Ile Leu Gln Ala Leu Phe Gln Cys Asp His Val 35 40

Gln Tyr Thr Leu Val Pro Val Ser Gly Trp Gln Glu Leu Glu Thr 50 55 60

Ala Phe Leu Glu His Lys Glu Gln Phe His Tyr Phe Ile Leu Ile 65 70 75

Asn Cys Gly Ala Asn Val Asp Leu Leu Asp Ile Leu Gln Pro Asp 80 85 90

Glu Asp Thr Ile Phe Phe Val Cys Asp Ser His Arg Pro Val Asn 95 100 105

Val Val Asn Val Tyr Asn Asp Thr Gln Ile Lys Leu Leu Ile Lys 110 115 120

Gln Asp Asp Asp Leu Glu Val Pro Ala Tyr Glu Asp Ile Phe Arg 125 130 135

Asp Glu Glu Glu Asp Glu Glu His Ser Gly Asn Asp Ser Asp Gly 140 145

Ser Glu Pro Ser Glu Lys Arg Thr Arg Leu Glu Glu Glu Ile Val 155 160 165

Glu Gln Thr Met Arg Arg Arg Gln Arg Arg Glu Trp Glu Ala Arg 170 175 180

Arg Arg Asp Ile Leu Phe Asp Tyr Glu Gln Tyr Glu Tyr His Gly
185 190

Thr Ser Ser Ala Met Val Met Phe Glu Leu Ala Trp Met Leu Ser 200 205 210

Lys Asp Leu Asn Asp Met Leu Trp Trp Ala Ile Val Gly Leu Thr 215 220 225

Asp Gln Trp Val Gln Asp Lys Ile Thr Gln Met Lys Tyr Val Thr 230 235 240

Asp Val Gly Val Leu Gln Arg His Val Ser Arg His Asn His Arg

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S	Ser	Phe	Glu	Tyr	Asp 275	Leu	Arg	Leu	Val	Leu 280	Tyr	Gln	His	Trp	Ser 285
Ι	eu	His	Asp	Ser	Leu 290	Суз	Asn	Thr	Ser	Tyr 295	Thr	Ala	Ala	Arg	Ph∈
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P	la	Asp	Met	Gly	Leu 320	Pro	Leu	Lys	Gln	Val 325	Lys	Gln	Lys	Phe	Glr 330
7	la	Met	Asp	Ile	Ser 335	Leu	Lys	Glu	Asn	Leu 340	Arg	Glu	Met	Ile	Glu 345
G	Slu	Ser	Ala	Asn	Lys 350	Phe	Gly	Met	Lys	Asp 355	Met	Arg	Val	Gln	Thr 360
E	he	Ser	Ile	His	Phe 365	Gly	Phe	Lys	His	Lys 370	Phe	Leu	Ala	Ser	Asp 375
V	al	Val	Phe	Ala	Thr 380	Met	Ser	Leu	Met	Glu 385	Ser	Pro	Glu	Lys	Asp 390
G	Sly	Ser	Gly	Thr	Asp 395	His	Phe	Ile	Gln	Ala 400	Leu	Asp	Ser	Leu	Ser 405
7	rg	Ser	Asn	Leu	Asp 410	Lys	Leu	Tyr	His	Gly 415	Leu	Glu	Leu	Ala	Lys 420
Ι	ys	Gln	Leu	Arg	Ala 425	Thr	G1n	Gln	Thr	Ile 430	Ala	Ser	Cys	Leu	Cys 435
Ί	'hr	Asn	Leu	Val	Ile 440	Ser	Gln	Gly	Pro	Phe 445	Leu	Tyr	Cys	Ser	Leu 450
M	let	Glu	Gly	Thr	Pro 455	Asp	Val	Met	Leu	Phe 460	Ser	Arg	Pro	Ala	Ser 465
I	eu	Ser	Leu		Ser 470					Lys 475		Phe	Val	Суѕ	Ser 480
Т	'hr	Lys	Asn	Arg	Arg 485	Cys	Lys	Leu	Leu	Pro 490	Leu	Val	Met	Ala	Ala 495
P	'ro	Leu	Ser	Met	Glu 500	His	Gly	Thr	Val	Thr 505	Val	Val	Gly	Ile	Pro 510
P	'ro	Glu	Thr	Asp	Ser 515	Ser	Asp	Arg	Lys	Asn 520	Phe	Phe	Gly	Arg	Ala 525
P	he	Glu	Lys	Ala	Ala 530	Glu	Ser	Thr	Ser	Ser 535	Arg	Met	Leu	His	Asn 540
Н	is	Phe	Asp	Leu	Ser 545	Val	Ile	Glu	Leu	Lys 550	Ala	Glu	Asp	Arg	Ser 555
L	ys	Phe	Leu	Asp	Ala	Leu	Ile	Ser	Leu	Leu	Ser				

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Gln Lys Arg Phe Phe Ala Phe Ser Val Gly Arg Lys Thr Ala Leu

Ala Pro Leu Arg Gly Ile Tyr Phe Phe Ser Leu Asn Val His Ser 170 175 180

Trp Asn Tyr Lys Glu Thr Tyr Val His Ile Met His Asn Gln Lys 185 190 195

Glu Ala Val Ile Leu Tyr Ala Gln Pro Ser Glu Arg Ser Ile Met

200 205 210 Gln Ser Gln Ser Val Met Leu Asp Leu Ala Tyr Gly Asp Arq Val 215 220 Trp Val Arg Leu Phe Lys Arg Gln Arg Glu Asn Ala Ile Tyr Ser Asn Asp Phe Asp Thr Tyr Ile Thr Phe Ser Gly His Leu Ile Lys 255 Ala Glu Asp Asp <210> 48 <211> 25 <212> DNA <213> Artificial Sequence <220> <223> Synthetic oligonucleotide probe <400> 48 ccagacgctg ctcttcgaaa gggtc 25 <210> 49 <211> 23 <212> DNA <213> Artificial Sequence <220> <223> Synthetic oligonucleotide probe <400> 49 ggtccccgta ggccaggtcc agc 23 <210> 50 <211> 50 <212> DNA <213> Artificial sequence <220> <223> Synthetic oligonucleotide probe ctacttcttc agcctcaatg tgcacagctg gaattacaag qagacqtacq 50 <210> 51 <211> 2768 <212> DNA <213> Homo sapiens <400> 51 actogaacgc agttgcttcg ggacccagga ccccctcggg cccgacccgc 50 caggaaagac tgaggccgcg gcctgccccg cccggctccc tgcgccgccg 100 ccgcctcccg ggacagaaga tgtgctccag ggtccctctg ctqctqccqc 150 tgctcctgct actggccctg gggcctgggg tgcagggctg cccatccggc 200 tgccagtgca gccagccaca gacagtcttc tgcactgccc gccaggggac 250

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Leu Pro Ser Gly Val Phe Gln Pro Leu Ala Asn Leu Ser Asn Leu

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Arg	Gly	Leu	Arg	Arg 125	Leu	Glu	Arg	Leu	Tyr 130	Leu	Gly	Lys	Asn	Arg 135
Ile	Arg	His	Ile	Gln 140	Pro	Gly	Ala	Phe	Asp 145	Thr	Leu	Asp	Arg	Leu 150
Leu	Glu	Leu	Lys	Leu 155	Gln	Asp	Asn	Glu	Leu 160	Arg	Ala	Leu	Pro	Pro 165
Leu	Arg	Leu	Pro	Arg 170	Leu	Leu	Leu	Leu	Asp 175	Leu	Ser	His	Asn	Ser 180
Leu	Leu	Ala	Leu	Glu 185	Pro	Gly	Ile	Leu	Asp 190	Thr	Ala	Asn	Val	Glu 195
Ala	Leu	Arg	Leu	Ala 200	Gly	Leu	Gly	Leu	Gln 205	Gln	Leu	Asp	Glu	Gly 210
Leu	Phe	Ser	Arg	Leu 215	Arg	Asn	Leu	His	Asp 220	Leu	Asp	Val	Ser	Asp 225
Asn	Gln	Leu	Glu	Arg 230	Val	Pro	Pro	Val	Ile 235	Arg	Gly	Leu	Arg	Gly 240
Leu	Thr	Arg	Leu	Arg 245	Leu	Ala	Gly	Asn	Thr 250	Arg	Ile	Ala	Gln	Leu 255
Arg	Pro	Glu	Asp	Leu 260	Ala	Gly	Leu	Ala	Ala 265	Leu	Gln	Glu	Leu	Asp 270
Val	Ser	Asn	Leu	Ser 275	Leu	Gln	Ala	Leu	Pro 280	Gly	Asp	Leu	Ser	Gly 285
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Ala	Pro	Thr	Trp	Leu 380	Ser	Pro	Thr	Ala	Pro 385	Ala	Thr	Glu	Ala	Pro 390
Ser	Pro	Pro	Ser	Thr 395	Ala	Pro	Pro	Thr	Val 400	Gly	Pro	Val	Pro	Gln 405
Pro	Gln	Asp	Cys	Pro	Pro	Ser	Thr	Cys	Leu	Asn	Glv	Glv	Thr	Cys

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Phe	Thr	Gly	Leu	Tyr 440	Cys	Glu	Ser	Gln	Met 445	Gly	Gln	Gly	Thr	Arc 450
Pro	Ser	Pro	Thr	Pro 455	Val	Thr	Pro	Arg	Pro 460	Pro	Arg	Ser	Leu	Thr 465
Leu	Gly	Ile	Glu	Pro 470	Val	Ser	Pro	Thr	Ser 475	Leu	Arg	Val	Gly	Leu 480
Gln	Arg	Tyr	Leu	Gln 485	Gly	Ser	Ser	Val	Gln 490	Leu	Arg	Ser	Leu	Arg 495
Leu	Thr	Tyr	Arg	Asn 500	Leu	Ser	Gly	Pro	Asp 505	Lys	Arg	Leu	Val	Thr 510
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Arg	Pro	Asn	Ala	Thr 530	Tyr	Ser	Val	Суѕ	Val 535	Met	Pro	Leu	Gly	Pro 540
Gly	Arg	Val	Pro	Glu 545	Gly	Glu	Glu	Ala	Cys 550	Gly	Glu	Ala	His	Thr 555
Pro	Pro	Ala	Val	His 560	Ser	Asn	His	Ala	Pro 565	Val	Thr	Gln	Ala	Arg 570
Glu	Gly	Asn	Leu	Pro 575	Leu	Leu	Ile	Ala	Pro 580	Ala	Leu	Ala	Ala	Val 585
Leu	Leu	Ala	Ala	Leu 590	Ala	Ala	Val	Gly	Ala 595	Ala	Tyr	Cys	Val	Arg 600
Arg	Gly	Arg	Ala	Met 605	Ala	Ala	Ala	Ala	Gln 610	Asp	Lys	Gly	Gln	Val 615
Gly	Pro	Gly	Ala	Gly 620	Pro	Leu	Glu	Leu	Glu 625	Gly	Val	Lys	Val	Pro 630
Leu	Glu	Pro	Gly	Pro 635	Lys	Ala	Thr	Glu	Gly 640	Gly	Gly	Glu	Ala	Leu 645
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50 55 60

Phe Gln Leu Gln Ser Ser Asp Phe His Ser Val Ser Lys Leu Arg
65 70 75

Val Leu Ile Leu Cys His Asn Arg Ile Gln Gln Leu Asp Leu Lys 80 85 90

Thr Phe Glu Phe Asn Lys Glu Leu Arg Tyr Leu Asp Leu Ser Asn Asn Arg Leu Lys Ser Val Thr Trp Tyr Leu Leu Ala Gly Leu Arg 110 115 Tyr Leu Asp Leu Ser Phe Asn Asp Phe Asp Thr Met Pro Ile Cys 125 130 Glu Glu Ala Gly Asn Met Ser His Leu Glu Ile Leu Gly Leu Ser 145 Gly Ala Lys Ile Gln Lys Ser Asp Phe Gln Lys Ile Ala His Leu 155 His Leu Asn Thr Val Phe Leu Gly Phe Arg Thr Leu Pro His Tyr 175 Glu Glu Gly Ser Leu Pro Ile Leu Asn Thr Thr Lys Leu His Ile 185 190 Val Leu Pro Met Asp Thr Asn Phe Trp Val Leu Leu Arg Asp Gly Ile Lys Thr Ser Lys Ile Leu Glu Met Thr Asn Ile Asp Gly Lys 215 Ser Gln Phe Val Ser Tyr Glu Met Gln Arg Asn Leu Ser Leu Glu 230 235 Asn Ala Lys Thr Ser Val Leu Leu Leu Asn Lys Val Asp Leu Leu 245 250 Trp Asp Asp Leu Phe Leu Ile Leu Gln Phe Val Trp His Thr Ser 265 Val Glu His Phe Gln Ile Arg Asn Val Thr Phe Gly Gly Lys Ala 280 Tyr Leu Asp His Asn Ser Phe Asp Tyr Ser Asn Thr Val Met Arg 295 Thr Ile Lys Leu Glu His Val His Phe Arg Val Phe Tyr Ile Gln Gln Asp Lys Ile Tyr Leu Leu Leu Thr Lys Met Asp Ile Glu Asn 325 Leu Thr Ile Ser Asn Ala Gln Met Pro His Met Leu Phe Pro Asn 335 340 Tyr Pro Thr Lys Phe Gln Tyr Leu Asn Phe Ala Asn Asn Ile Leu 355 Thr Asp Glu Leu Phe Lys Arg Thr Ile Gln Leu Pro His Leu Lys 365 Thr Leu Ile Leu Asn Gly Asn Lys Leu Glu Thr Leu Ser Leu Val 385 Ser Cys Phe Ala Asn Asn Thr Pro Leu Glu His Leu Asp Leu Ser 395

Gln Asn Leu Leu Gln His Lys Asn Asp Glu Asn Cys Ser Trp Pro Glu Thr Val Val Asn Met Asn Leu Ser Tyr Asn Lys Leu Ser Asp Ser Val Phe Arg Cys Leu Pro Lys Ser Ile Gln Ile Leu Asp Leu 440 445 Asn Asn Asn Gln Ile Gln Thr Val Pro Lys Glu Thr Ile His Leu 460 Met Ala Leu Arg Glu Leu Asn Ile Ala Phe Asn Phe Leu Thr Asp 475 Leu Pro Gly Cys Ser His Phe Ser Arg Leu Ser Val Leu Asn Ile 490 Glu Met Asn Phe Ile Leu Ser Pro Ser Leu Asp Phe Val Gln Ser 505 Cys Gln Glu Val Lys Thr Leu Asn Ala Gly Arg Asn Pro Phe Arg Cys Thr Cys Glu Leu Lys Asn Phe Ile Gln Leu Glu Thr Tyr Ser 535 Glu Val Met Met Val Gly Trp Ser Asp Ser Tyr Thr Cys Glu Tyr 550 Pro Leu Asn Leu Arg Gly Thr Arg Leu Lys Asp Val His Leu His 565 Glu Leu Ser Cys Asn Thr Ala Leu Leu Ile Val Thr Ile Val Val 580 Ile Met Leu Val Leu Gly Leu Ala Val Ala Phe Cys Cys Leu His 595 Phe Asp Leu Pro Trp Tyr Leu Arg Met Leu Gly Gln Cys Thr Gln 615 Thr Trp His Arg Val Arg Lys Thr Thr Gln Glu Gln Leu Lys Arg 620 Asn Val Arg Phe His Ala Phe Ile Ser Tyr Ser Glu His Asp Ser 635 640 Leu Trp Val Lys Asn Glu Leu Ile Pro Asn Leu Glu Lys Glu Asp 650 660 Gly Ser Ile Leu Ile Cys Leu Tyr Glu Ser Tyr Phe Asp Pro Gly Lys Ser Ile Ser Glu Asn Ile Val Ser Phe Ile Glu Lys Ser Tyr 680 685 690 Lys Ser Ile Phe Val Leu Ser Pro Asn Phe Val Gln Asn Glu Trp 705 Cys His Tyr Glu Phe Tyr Phe Ala His His Asn Leu Phe His Glu 710

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Tyr Tyr Ala Arg Pro Glu Pro Glu Leu Glu Thr Phe Ser Pro Pro 50 55 60

Leu Pro Ala Gly Pro Gly Glu Glu Trp Glu Arg Arg Pro Gln Glu 65 70 75

Pro Arg Pro Pro Lys Arg Ala Thr Lys Pro Lys Lys Ala Pro Lys 80 85 90

Arg Glu Lys Ser Ala Pro Glu Pro Pro Pro Pro Gly Lys His Ser 95 100 105

Asn Lys Lys Val Met Arg Thr Lys Ser Ser Glu Lys Ala Ala Asn 110 115 120

Asp Asp His Ser Val Arg Val Ala Arg Glu Asp Val Arg Glu Ser 125 130 135

Cys Pro Pro Leu Gly Leu Glu Thr Leu Lys Ile Thr Asp Phe Gln
140 145 150

Leu His Ala Ser Thr Val Lys Arg Tyr Gly Leu Gly Ala His Arg 155 160 165

Gly Arg Leu Asn Ile Gln Ala Gly Ile Asn Glu Asn Asp Phe Tyr 170 175 180

Asp Gly Ala Trp Cys Ala Gly Arg Asn Asp Leu Gln Gln Trp Ile

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Gln	Gly	Arg	Asn	Ser 215	Leu	Trp	Leu	Ser	Asp 220	Trp	Val	Thr	Ser	Tyr 225
Lys	Val	Met	Val	Ser 230	Asn	Asp	Ser	His	Thr 235	Trp	Val	Thr	Val	Lys 240
Asn	Gly	Ser	Gly	Asp 245	Met	Ile	Phe	Glu	Gly 250	Asn	Ser	Glu	Lys	Glu 255
Ile	Pro	Val	Leu	Asn 260	Glu	Leu	Pro	Val	Pro 265	Met	Val	Ala	Arg	Tyr 270
Ile	Arg	Ile	Asn	Pro 275	Gln	Ser	Trp	Phe	Asp 280	Asn	Gly	Ser	Ile	Cys 285
Met	Arg	Met	Glu	Ile 290	Leu	Gly	Cys	Pro	Leu 295	Pro	Asp	Pro	Asn	Asn 300
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Phe	Lys	His	His	Asn 320	Tyr	Lys	Glu	Met	Arg 325	Gln	Leu	Met	Lys	Val 330
Val	Asn	Glu	Met	Cys 335	Pro	Asn	Ile	Thr	Arg 340	Ile	Tyr	Asn	Ile	Gly 345
Lys	Ser	His	Gln	Gly 350	Leu	Lys	Leu	Tyr	Ala 355	Val	Glu	Ile	Ser	Asp 360
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Leu	Leu	Val	Gln	Phe 395	Val	Cys	Gln	Glu	Tyr 400	Leu	Ala	Arg	Asn	Ala 405
Arg	Ile	Val	His	Leu 410	Val	Glu	Glu	Thr	Arg 415	Ile	His	Val	Leu	Pro 420
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Glu	Leu	Gly	Gly	Trp 440	Ser	Leu	Gly	Arg	Trp 445	Thr	His	Asp	Gly	Ile 450
Asp	Ile	Asn	Asn	Asn 455	Phe	Pro	Asp	Leu	Asn 460	Thr	Leu	Leu	Trp	Glu 465
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Ile	Ala	Ile	Pro	Glu 485	Trp	Phe	Leu	Ser	Glu 490	Asn	Ala	Thr	Val	Ala 495
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Pro	Туг	Asp	Leu	Val 530	Arg	Ser	Pro	Trp	Lys 535		Gln	Glu	His	Thr 540
Pro	Thr	Pro	Asp	Asp 545	His	Val	Phe	Arg	Trp 550		Ala	Tyr	Ser	Tyr 555
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His	Thr	Glu	Asp	Phe 575	Gln	Lys	Glu	Glu	Gly 580		Val	Asn	Gly	Ala 585
Ser	Trp	His	Thr	Val 590	Ala	Gly	Ser	Leu	Asn 595	Asp	Phe	Ser	Tyr	Leu 600
His	Thr	Asn	Cys	Phe 605	Glu	Leu	Ser	Ile	Tyr 610	Val	Gly	Cys	Asp	Lys 615
Tyr	Pro	His	Glu	Ser 620	Gln	Leu	Pro	Glu	Glu 625	Trp	Glu	Asn	Asn	Arg 630
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Ile	Ser	Val	Glu	Gly 665	Ile	Asn	His	Asp	Ile 670	Arg	Thr	Ala	Asn	Asp 675
Gly	Asp	Tyr	Trp	Arg 680	Leu	Leu	Asn	Pro	Gly 685	Glu	Tyr	Val	Val	Thr 690
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Phe Ser Ser Ser Ser Arg Ser Gly Ser Ser Ser Ser Arg Ser Leu
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Gly Ser Gly Gly Ser Val Ser Gln Leu Phe Ser Asn Phe Thr Gly
65 70 75

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Asp Thr Thr Phe Pro Val Asp Arg Val Glu Arg Leu Glu Phe Thr 95 100 105

Ala His Val Leu Ser Gln Lys Phe Glu Lys Glu Leu Ser Lys Val 110 115 120

Arg Glu Tyr Val Gln Leu Ile Ser Val Tyr Glu Lys Lys Leu Leu 125 130 135

Asn Leu Thr Val Arg Ile Asp Ile Met Glu Lys Asp Thr Ile Ser 140 145 150

Tyr Thr Glu Leu Asp Phe Glu Leu Ile Lys Val Glu Val Lys Glu
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Met Glu Lys Leu Val Ile Gln Leu Lys Glu Ser Phe Gly Gly Ser 170 175

Ser Glu Ile Val Asp Gln Leu Glu Val Glu Ile Arg Asn Met Thr 185 190 190

Leu Leu Val Glu Lys Leu Glu Thr Leu Asp Lys Asn Asn Val Leu 200 205 210

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Ser Gly Asn Asn Ser Thr Val Thr Arg Leu Ile Tyr Ala Leu Phe
Leu Leu Val Gly Val Cys Val Ala Cys Val Met Leu Ile Pro Gly
Met Glu Glu Gln Leu Asn Lys Ile Pro Gly Phe Cys Glu Asn Glu
Lys Gly Val Val Pro Cys Asn Ile Leu Val Gly Tyr Lys Ala Val
Tyr Arg Leu Cys Phe Gly Leu Ala Met Phe Tyr Leu Leu Leu Ser
Leu Leu Met Ile Lys Val Lys Ser Ser Ser Asp Pro Arg Ala Ala
                110
                                     115
Val His Asn Gly Phe Trp Phe Phe Lys Phe Ala Ala Ala Ile Ala
                                     130
Ile Ile Ile Gly Ala Phe Phe Ile Pro Glu Gly Thr Phe Thr Thr
                                     145
Val Trp Phe Tyr Val Gly Met Ala Gly Ala Phe Cys Phe Ile Leu
                                     160
Ile Gln Leu Val Leu Leu Ile Asp Phe Ala His Ser Trp Asn Glu
Ser Trp Val Glu Lys Met Glu Glu Gly Asn Ser Arg Cys Trp Tyr
Ala Ala Leu Leu Ser Ala Thr Ala Leu Asn Tyr Leu Leu Ser Leu
                                    205
Val Ala Ile Val Leu Phe Phe Val Tyr Tyr Thr His Pro Ala Ser
                215
Cys Ser Glu Asn Lys Ala Phe Ile Ser Val Asn Met Leu Leu Cys
                230
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Val Gly Ala Ser Val Met Ser Ile Leu Pro Lys Ile Gln Glu Ser
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280

Gln Pro Arg Ser Gly Leu Leu Gln Ser Ser Val Ile Thr Val Tyr

Thr Met Tyr Leu Thr Trp Ser Ala Met Thr Asn Glu Pro Glu Thr

275

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Asn Cys Asn Pro Ser Leu Leu Ser Ile Ile Gly Tyr Asn Thr Thr
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Ser Thr Val Pro Lys Glu Gly Gln Ser Val Gln Trp Trp His Ala
Gln Gly Ile Ile Gly Leu Ile Leu Phe Leu Leu Cys Val Phe Tyr
                320
Ser Ser Ile Arg Thr Ser Asn Asn Ser Gln Val Asn Lys Leu Thr
                                     340
Leu Thr Ser Asp Glu Ser Thr Leu Ile Glu Asp Gly Gly Ala Arg
                350
                                     355
Ser Asp Gly Ser Leu Glu Asp Gly Asp Asp Val His Arg Ala Val
Asp Asn Glu Arg Asp Gly Val Thr Tyr Ser Tyr Ser Phe Phe His
                380
                                     385
Phe Met Leu Phe Leu Ala Ser Leu Tyr Ile Met Met Thr Leu Thr
                                     400
                                                         405
Asn Trp Ser Arg Tyr Glu Pro Ser Arg Glu Met Lys Ser Gln Trp
Thr Ala Val Trp Val Lys Ile Ser Ser Ser Trp Ile Gly Ile Val
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Leu Tyr Val Trp Thr Leu Val Ala Pro Leu Val Leu Thr Asn Arg
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Asp Phe Asp

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<211> 480

<212> DNA

<213> Homo sapiens

440

<220>

<221> unsure

<222> 48, 163

<223> unknown base

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tagtggaaae aanteeactg taaeetagatt gateetatgea ettetettge 200
ttgttggagt atgtgtaget tgtgtaatgt tgataeeagg aatggaagaa 250
caaeetgaata agatteetgg attttgtgag aatggaaaag gtgttgteee 300
ttgtaaeatt ttggttgget ataaegetgt ataeegttt tgetttggtt 350
tggetatgtt etatettet eteetttae taatgateaa agtgaagagt 400

445

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<221> unsure
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<223> unknown base
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 tgctgtccta gtggaaacaa ntccactgta attagattga tntatgcact 150
 tttnttgctt gttggagtan gtgtagcttg tgtaatgttg ataccaggaa 200
 tggaagaaca actgaataag attcctggat tttgtgagaa tgagaaaggt 250
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 ctttggtttg gctangttct atnttcttct ctctttacta atgatcaaag 350
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 tttaaatttg ctgcagcaat tgcaattatt attggggc 438
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<211> 473
<212> DNA
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<221> unsure
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<223> unknown base
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gtttgtgtgg aagtgccccg tgtttgctat gccgatgctg tcctagtgga 150
aacaactcca ctgtaactag attgatctat gcacttttct tgcttgttgg 200
agtatgtgta gcttgtgtaa tgttgatacc aggaatggaa gaacaactga 250
ataagattcc tggattttgt gagaatgaga aaggtgttgt cccttgtaac 300
attttggttg gctataaagc tgtatatcgt ttgtgctttg gtttggctat 350
gttctatctt cttctctt tactaatgat caaagtgaag agtagcagtg 400
atcctagage tgcagtgcac aatggatttt ggttctttaa atttgctgca 450
gcaattgcaa ttattattgg ggc 473
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 <211> 666
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 <221> unsure
 <222> 21, 111
 <223> unknown base
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  caggattgga ngaacaactg aataagattc ctggattttt gtgagaatga 150
  gaaaggtgtt gtccccttgt aacatttttg gttggctata aagctgtata 200
  tcgtttgtgc tttggtttgg ctatgttcta tcttcttctc tctttactaa 250
  tgatcaaagt gaagagtagc agtgatccta gagctgcagt gcacaatgga 300
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<213> Artificial Sequence
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<210> 79
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<400> 79
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<210> 80
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<400> 80
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<210> 81
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 gagcatgcca ccactggact gac 23
<210> 82
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<223> Synthetic oligonucleotide probe
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 gcac 54
<210> 83
<211> 3906
<212> DNA
<213> Homo sapiens
<400> 83
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<211> 867

<212> PRT

<213> Homo sapiens

<400> 84

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20 25 30

Leu Lys Gly Arg Phe Gln Arg Asp Arg Arg Asn Ile Arg Pro Asn 35 40 45

Ile Ile Leu Val Leu Thr Asp Asp Gln Asp Val Glu Leu Gly Ser 50 55 60

Met Gln Val Met Asn Lys Thr Arg Arg Ile Met Glu Gln Gly Gly 65 70 75

Ala His Phe Ile Asn Ala Phe Val Thr Thr Pro Met Cys Cys Pro 80 85 90

Ser Arg Ser Ser Ile Leu Thr Gly Lys Tyr Val His Asn His Asn 95  $\phantom{000}$  100  $\phantom{000}$  105

Thr Tyr Thr Asn Asn Glu Asn Cys Ser Ser Pro Ser Trp Gln Ala 110 115 120

Gln His Glu Ser Arg Thr Phe Ala Val Tyr Leu Asn Ser Thr Gly 125 130 135

Tyr Arg Thr Ala Phe Phe Gly Lys Tyr Leu Asn Glu Tyr Asn Gly 140 145

Ser Tyr Val Pro Pro Gly Trp Lys Glu Trp Val Gly Leu Leu Lys 155 160 165

Asn Ser Arg Phe Tyr Asn Tyr Thr Leu Cys Arg Asn Gly Val Lys 170 175

Glu Lys His Gly Ser Asp Tyr Ser Lys Asp Tyr Leu Thr Asp Leu 185 190 195

Ile Thr Asn Asp Ser Val Ser Phe Phe Arg Thr Ser Lys Lys Met 200 205 210

Tyr Pro His Arg Pro Val Leu Met Val Ile Ser His Ala Ala Pro 215 220 225

His Gly Pro Glu Asp Ser Ala Pro Gln Tyr Ser Arg Leu Phe Pro 230 235 240

Asn Ala Ser Gln His Ile Thr Pro Ser Tyr Asn Tyr Ala Pro Asn 245 250 255

Pro Asp Lys His Trp Ile Met Arg Tyr Thr Gly Pro Met Lys Pro Ile His Met Glu Phe Thr Asn Met Leu Gln Arg Lys Arg Leu Gln 275 280 Thr Leu Met Ser Val Asp Asp Ser Met Glu Thr Ile Tyr Asn Met Leu Val Glu Thr Gly Glu Leu Asp Asn Thr Tyr Ile Val Tyr Thr Ala Asp His Gly Tyr His Ile Gly Gln Phe Gly Leu Val Lys Gly 320 325 330 Lys Ser Met Pro Tyr Glu Phe Asp Ile Arg Val Pro Phe Tyr Val Arg Gly Pro Asn Val Glu Ala Gly Cys Leu Asn Pro His Ile Val 355 Leu Asn Ile Asp Leu Ala Pro Thr Ile Leu Asp Ile Ala Gly Leu 365 370 Asp Ile Pro Ala Asp Met Asp Gly Lys Ser Ile Leu Lys Leu Leu Asp Thr Glu Arg Pro Val Asn Arg Phe His Leu Lys Lys Met Arg Val Trp Arg Asp Ser Phe Leu Val Glu Arg Gly Lys Leu Leu 415 His Lys Arg Asp Asn Asp Lys Val Asp Ala Gln Glu Glu Asn Phe 430 Leu Pro Lys Tyr Gln Arg Val Lys Asp Leu Cys Gln Arg Ala Glu 440 445 Tyr Gln Thr Ala Cys Glu Gln Leu Gly Gln Lys Trp Gln Cys Val Glu Asp Ala Thr Gly Lys Leu Lys Leu His Lys Cys Lys Gly Pro Met Arg Leu Gly Gly Ser Arg Ala Leu Ser Asn Leu Val Pro Lys 490 Tyr Tyr Gly Gln Gly Ser Glu Ala Cys Thr Cys Asp Ser Gly Asp Tyr Lys Leu Ser Leu Ala Gly Arg Arg Lys Lys Leu Phe Lys Lys 520 Lys Tyr Lys Ala Ser Tyr Val Arg Ser Arg Ser Ile Arg Ser Val Ala Ile Glu Val Asp Gly Arg Val Tyr His Val Gly Leu Gly Asp Ala Ala Gln Pro Arg Asn Leu Thr Lys Arg His Trp Pro Gly Ala 560 565

Pro Glu Asp Gln Asp Asp Lys Asp Gly Gly Asp Phe Ser Gly Thr Gly Gly Leu Pro Asp Tyr Ser Ala Ala Asn Pro Ile Lys Val Thr 590 595 His Arg Cys Tyr Ile Leu Glu Asn Asp Thr Val Gln Cys Asp Leu 610 Asp Leu Tyr Lys Ser Leu Gln Ala Trp Lys Asp His Lys Leu His Ile Asp His Glu Ile Glu Thr Leu Gln Asn Lys Ile Lys Asn Leu Arg Glu Val Arg Gly His Leu Lys Lys Lys Arg Pro Glu Glu Cys 650 655 Asp Cys His Lys Ile Ser Tyr His Thr Gln His Lys Gly Arg Leu Lys His Arg Gly Ser Ser Leu His Pro Phe Arg Lys Gly Leu Gln Glu Lys Asp Lys Val Trp Leu Leu Arg Glu Gln Lys Arg Lys 695 Lys Leu Arg Lys Leu Leu Lys Arg Leu Gln Asn Asn Asp Thr Cys Ser Met Pro Gly Leu Thr Cys Phe Thr His Asp Asn Gln His Trp 730 Gln Thr Ala Pro Phe Trp Thr Leu Gly Pro Phe Cys Ala Cys Thr 740 745 Ser Ala Asn Asn Asn Thr Tyr Trp Cys Met Arg Thr Ile Asn Glu Thr His Asn Phe Leu Phe Cys Glu Phe Ala Thr Gly Phe Leu Glu Tyr Phe Asp Leu Asn Thr Asp Pro Tyr Gln Leu Met Asn Ala Val Asn Thr Leu Asp Arg Asp Val Leu Asn Gln Leu His Val Gln Leu 805 Met Glu Leu Arg Ser Cys Lys Gly Tyr Lys Gln Cys Asn Pro Arg Thr Arg Asn Met Asp Leu Asp Gly Gly Ser Tyr Glu Gln Tyr Arg 830 835 Gln Phe Gln Arg Arg Lys Trp Pro Glu Met Lys Arg Pro Ser Ser Lys Ser Leu Gly Gln Leu Trp Glu Gly Trp Glu Gly

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<211> 19

<212> DNA

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<211> 971
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<210> 95

<211> 115

<212> PRT

<213> Homo sapiens

<400> 95

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Gly Ala Ala Val Ala Val Leu Leu Leu Leu Leu Leu Leu Ala Thr 20 25 30

Cys Leu Phe His Gly Arg Gln Asp Cys Asp Val Glu Arg Asn Arg 35 40 45

Thr Ala Ala Gly Gly Asn Arg Val Arg Arg Ala Gln Pro Trp Pro
50 55 60

Phe Arg Arg Gly His Leu Gly Ile Phe His His Arg His 65 70 75

Pro Gly His Val Ser His Val Pro Asn Val Gly Leu His His 80 85 90

His His Pro Arg His Thr Pro His His Leu His His His His 95 100 105

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<212> DNA

<213> Homo sapiens

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gctgacgctg ctggcctttg ccgggtactc agggctactg gctggggtgg 150
aagtgagtgc tgggtcaccc cccatccgca acgtcactgt ggcctacaag 200
ttccacatgg ggctctatgg tgagactggg cggctttca ctgagagctg 250
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<210> 97

<211> 313

<212> PRT

<213> Homo sapiens

<400> 97

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Leu Ala Gly Val Glu Val Ser Ala Gly Ser Pro Pro Ile Arg Asn
35

Val Thr Val Ala Tyr Lys Phe His Met Gly Leu Tyr Gly Glu Thr
50 55 60

Gly Arg Leu Phe Thr Glu Ser Cys Ser Ile Ser Pro Lys Leu Arg
65 70 75

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Ser Ile Ala Val Tyr Tyr Asp Asn Pro His Met Val Pro Pro Asp
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Lys Cys Arg Cys Ala Val Gly Ser Ile Leu Ser Glu Gly Glu Glu
Ser Pro Ser Pro Glu Leu Ile Asp Leu Tyr Gln Lys Phe Gly Phe
                 110
                                     115
Lys Val Phe Ser Phe Pro Ala Pro Ser His Val Val Thr Ala Thr
                                     130
Phe Pro Tyr Thr Thr Ile Leu Ser Ile Trp Leu Ala Thr Arg Arg
                 140
                                     145
Val His Pro Ala Leu Asp Thr Tyr Ile Lys Glu Arg Lys Leu Cys
Ala Tyr Pro Arg Leu Glu Ile Tyr Gln Glu Asp Gln Ile His Phe
                                     175
Met Cys Pro Leu Ala Arg Gln Gly Asp Phe Tyr Val Pro Glu Met
Lys Glu Thr Glu Trp Lys Trp Arg Gly Leu Val Glu Ala Ile Asp
                                     205
Thr Gln Val Asp Gly Thr Gly Ala Asp Thr Met Ser Asp Thr Ser
                215
                                     220
Ser Val Ser Leu Glu Val Ser Pro Gly Ser Arg Glu Thr Ser Ala
                230
Ala Thr Leu Ser Pro Gly Ala Ser Ser Arg Gly Trp Asp Asp Gly
                                     250
                                                         255
Asp Thr Arg Ser Glu His Ser Tyr Ser Glu Ser Gly Ala Ser Gly
                260
                                     265
Ser Ser Phe Glu Glu Leu Asp Leu Glu Gly Glu Gly Pro Leu Gly
                275
                                                         285
Glu Ser Arg Leu Asp Pro Gly Thr Glu Pro Leu Gly Thr Thr Lys
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Trp Leu Trp Glu Pro Thr Ala Pro Glu Lys Gly Lys Glu
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<211> 725

<212> DNA

<213> Homo sapiens

305

<400> 98

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310

cacgetteae atacactaca egggaagett ggtagatgga egtattattg 300 acaceteect gaccagagae ectetggtta tagaacttgg ecaaaageag 350 gtgatteeag gtetggagea gagtettete gacatgtgtg tgggagagaa 400 gegaagggea ateatteett eteaettgge etatggaaaa eggggattte 450 caccatetgt eceageggat geagtggtge agtatgaegt ggagetgatt 500 geaetaatee gageeaacta etggetaaag etggtgaagg geattttgee 550 tetggtaggg atggeeatgg tgeeageeet eetgggeete attgggtate 600 acetatacag aaaggeeaat agaceeaaag teteeaaaa gaageteaag 650 gaagagaaac gaaacaagag eaaaaagaa taataaataa taaatttaa 700 aaaacttaaa aaaaaaaaa aaaaa 725

<210> 99 <211> 201 <212> PRT

<213> Homo sapiens

<400> 99

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Thr Glu Ser Pro Val Arg Thr Leu Gln Val Glu Thr Leu Val Glu 35 40 45

Pro Pro Glu Pro Cys Ala Glu Pro Ala Ala Phe Gly Asp Thr Leu 50 55 60

His Ile His Tyr Thr Gly Ser Leu Val Asp Gly Arg Ile Ile Asp 65 70 75

Thr Ser Leu Thr Arg Asp Pro Leu Val Ile Glu Leu Gly Gln Lys 80 85 90

Gln Val Ile Pro Gly Leu Glu Gln Ser Leu Leu Asp Met Cys Val 95 100 105

Gly Glu Lys Arg Arg Ala Ile Ile Pro Ser His Leu Ala Tyr Gly
110 115 120

Lys Arg Gly Phe Pro Pro Ser Val Pro Ala Asp Ala Val Val Gln 125 130 135

Tyr Asp Val Glu Leu Ile Ala Leu Ile Arg Ala Asn Tyr Trp Leu 140 145 150

Lys Leu Val Lys Gly Ile Leu Pro Leu Val Gly Met Ala Met Val 155 160 165

Pro Ala Leu Leu Gly Leu Ile Gly Tyr His Leu Tyr Arg Lys Ala 170 175 180

Asn Arg Pro Lys Val Ser Lys Lys Lys Leu Lys Glu Glu Lys Arg

Šazi:

185 190 195

Asn Lys Ser Lys Lys Lys 200

<210> 100 <211> 705

<211> 703 <212> DNA

<213> Homo sapiens

<400> 100

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gaggctgggc tcgaaaccga aagtcccgtc cggaccctcc aagtggagac 200
cctggtggag cccccagaac catgtgccga gcccgctgct tttggagaca 250
cgcttcacat acactacacg ggaagcttgg tagatggacg tattattgac 300
acctccctga ccagagaccc tctggttata gaacttggcc aaaagcaggt 350
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actaatccga gccaactact ggctaaagct ggtgaagggc attttgcctc 550
tggtagggat ggccatggtg ccaccctcct gggcctcatt gggtatcacc 600
tatacagaaa ggccaataga cccaaagtct ccaaaaagaa gctcaaggaa 650
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actta 705

<210> 101

<211> 543

<212> DNA

<213> Homo sapiens

<400> 101

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<210> 102

<211> 1316

<212> DNA

<213> Homo sapiens

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<210> 103

<211> 157

<212> PRT

<213> Homo sapiens

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Trp Gly Glu Lys Arg Asn Thr Ile Ala Ser Ile Ala Ala Gly Val 20 25 30

Leu Phe Phe Thr Gly Trp Trp Ile Ile Ile Asp Ala Ala Val Ile
35 40 45

Tyr Pro Thr Met Lys Asp Phe Asn His Ser Tyr His Ala Cys Gly 50 55

Val Ile Ala Thr Ile Ala Phe Leu Met Ile Asn Ala Val Ser Asn
65 70 75

Gly Gln Val Arg Gly Asp Ser Tyr Ser Glu Gly Cys Leu Gly Gln 80 85 90

Thr Gly Ala Arg Ile Trp Leu Phe Val Gly Phe Met Leu Ala Phe 95 100 105

Gly Ser Leu Ile Ala Ser Met Trp Ile Leu Phe Gly Gly Tyr Val 110 115 120

Ala Lys Glu Lys Asp Ile Val Tyr Pro Gly Ile Ala Val Phe Phe 125 130 135

Gln Asn Ala Phe Ile Phe Phe Gly Gly Leu Val Phe Lys Phe Gly 140 145 150

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<213> Homo sapiens

<400> 104

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<222> 26, 38, 81, 115, 207, 329, 380, 446, 449
<223> unknown base
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agatttnaac cactcatacc atgcctgtgg tgttatagca accatagcct 250
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 gccgaaagga gtaccccatg tacagtggaq agaaagccta cattcagggc 550
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<210> 113

<211> 610

<212> PRT

<213> Homo sapiens

<400> 113

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Val Leu Cys Lys Val Tyr Leu Gly Leu Phe Ser Gly Ser Ser Pro 20 25 30

Asn Pro Phe Ser Glu Asp Val Lys Arg Pro Pro Ala Pro Leu Val 35 40 40

Thr Asp Lys Glu Ala Arg Lys Lys Val Leu Lys Gln Ala Phe Ser 50 55 60

Ala Asn Gln Val Pro Glu Lys Leu Asp Val Val Ile Gly Ser
65 70 75

Gly Phe Gly Gly Leu Ala Ala Ala Ala Ile Leu Ala Lys Ala Gly 80 85 90

Lys Arg Val Leu Val Leu Glu Gln His Thr Lys Ala Gly Gly Cys 95 100 105

Cys His Thr Phe Gly Lys Asn Gly Leu Glu Phe Asp Thr Gly Ile His Tyr Ile Gly Arg Met Glu Glu Gly Ser Ile Gly Arg Phe Ile Leu Asp Gln Ile Thr Glu Gly Gln Leu Asp Trp Ala Pro Leu Ser Ser Pro Phe Asp Ile Met Val Leu Glu Gly Pro Asn Gly Arg Lys 155 160 Glu Tyr Pro Met Tyr Ser Gly Glu Lys Ala Tyr Ile Gln Gly Leu Lys Glu Lys Phe Pro Gln Glu Glu Ala Ile Ile Asp Lys Tyr Ile 190 Lys Leu Val Lys Val Val Ser Ser Gly Ala Pro His Ala Ile Leu 200 205 Leu Lys Phe Leu Pro Leu Pro Val Val Gln Leu Leu Asp Arg Cys 220 Gly Leu Leu Thr Arg Phe Ser Pro Phe Leu Gln Ala Ser Thr Gln Ser Leu Ala Glu Val Leu Gln Gln Leu Gly Ala Ser Ser Glu Leu 245 Gln Ala Val Leu Ser Tyr Ile Phe Pro Thr Tyr Gly Val Thr Pro 260 265 Asn His Ser Ala Phe Ser Met His Ala Leu Leu Val Asn His Tyr 275 280 Met Lys Gly Gly Phe Tyr Pro Arg Gly Gly Ser Ser Glu Ile Ala Phe His Thr Ile Pro Val Ile Gln Arg Ala Gly Gly Ala Val Leu 310 Thr Lys Ala Thr Val Gln Ser Val Leu Leu Asp Ser Ala Gly Lys Ala Cys Gly Val Ser Val Lys Lys Gly His Glu Leu Val Asn Ile 335 340 Tyr Cys Pro Ile Val Val Ser Asn Ala Gly Leu Phe Asn Thr Tyr 355 360 Glu His Leu Leu Pro Gly Asn Ala Arg Cys Leu Pro Gly Val Lys 370 365 Gln Gln Leu Gly Thr Val Arg Pro Gly Leu Gly Met Thr Ser Val 380 385 Phe Ile Cys Leu Arg Gly Thr Lys Glu Asp Leu His Leu Pro Ser 400 Thr Asn Tyr Tyr Val Tyr Tyr Asp Thr Asp Met Asp Gln Ala Met 415

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Pro Leu Leu Phe Phe Ala Phe Pro Ser Ala Lys Asp Pro Thr Trp
Glu Asp Arg Phe Pro Gly Arg Ser Thr Met Ile Met Leu Ile Pro
                                     460
Thr Ala Tyr Glu Trp Phe Glu Glu Trp Gln Ala Glu Leu Lys Gly
                                     475
Lys Arg Gly Ser Asp Tyr Glu Thr Phe Lys Asn Ser Phe Val Glu
                                     490
Ala Ser Met Ser Val Val Leu Lys Leu Phe Pro Gln Leu Glu Gly
                500
                                     505
Lys Val Glu Ser Val Thr Ala Gly Ser Pro Leu Thr Asn Gln Phe
                515
                                     520
                                                         525
Tyr Leu Ala Ala Pro Arg Gly Ala Cys Tyr Gly Ala Asp His Asp
Leu Gly Arg Leu His Pro Cys Val Met Ala Ser Leu Arg Ala Gln
Ser Pro Ile Pro Asn Leu Tyr Leu Thr Gly Gln Asp Ile Phe Thr
                560
                                     565
                                                         570
Cys Gly Leu Val Gly Ala Leu Gln Gly Ala Leu Leu Cys Ser Ser
                                     580
Ala Ile Leu Lys Arg Asn Leu Tyr Ser Asp Leu Lys Asn Leu Asp
                                     595
                590
Ser Arg Ile Arg Ala Gln Lys Lys Lys Asn
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<210> 114

<211> 1701

<212> DNA

<213> Homo sapiens

605

## <400> 114

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aagaagaggc tgctaagaga cggcagatgc aggaagcaga aatgatgtat 650
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aatatccagg cagcgagaga gatgtttgag aagctgactg aggaaggctc 850
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<210> 115
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<sup>&</sup>lt;211> 301

<sup>&</sup>lt;212> PRT

<sup>&</sup>lt;213> Homo sapiens

<sup>&</sup>lt;400> 115

Met Arg Val Arg Ile Gly Leu Thr Leu Leu Leu Cys Ala Val Leu  $1 \hspace{1cm} 5 \hspace{1cm} 10 \hspace{1cm} 15$ 

Leu Ser Leu Ala Ser Ala Ser Ser Asp Glu Glu Gly Ser Gln Asp 20 25 30

Glu Ser Leu Asp Ser Lys Thr Thr Leu Thr Ser Asp Glu Ser Val Lys Asp His Thr Thr Ala Gly Arg Val Val Ala Gly Gln Ile Phe Leu Asp Ser Glu Glu Ser Glu Leu Glu Ser Ser Ile Gln Glu Glu Glu Asp Ser Leu Lys Ser Gln Glu Gly Glu Ser Val Thr Glu Asp Ile Ser Phe Leu Glu Ser Pro Asn Pro Glu Asn Lys Asp Tyr Glu Glu Pro Lys Lys Val Arg Lys Pro Ala Leu Thr Ala Ile Glu Gly 110 115 Thr Ala His Gly Glu Pro Cys His Phe Pro Phe Leu Phe Leu Asp Lys Glu Tyr Asp Glu Cys Thr Ser Asp Gly Arg Glu Asp Gly Arg Leu Trp Cys Ala Thr Thr Tyr Asp Tyr Lys Ala Asp Glu Lys Trp 155 Gly Phe Cys Glu Thr Glu Glu Glu Ala Ala Lys Arg Arg Gln Met 170 Gln Glu Ala Glu Met Met Tyr Gln Thr Gly Met Lys Ile Leu Asn 185 190 Gly Ser Asn Lys Lys Ser Gln Lys Arg Glu Ala Tyr Arg Tyr Leu 200 Gln Lys Ala Ala Ser Met Asn His Thr Lys Ala Leu Glu Arg Val Ser Tyr Ala Leu Leu Phe Gly Asp Tyr Leu Pro Gln Asn Ile Gln 230 235 Ala Ala Arg Glu Met Phe Glu Lys Leu Thr Glu Glu Gly Ser Pro Lys Gly Gln Thr Ala Leu Gly Phe Leu Tyr Ala Ser Gly Leu Gly 260 Val Asn Ser Ser Gln Ala Lys Ala Leu Val Tyr Tyr Thr Phe Gly 275 Ala Leu Gly Gly Asn Leu Ile Ala His Met Val Leu Val Ser Arg

Leu

<210> 116

<211> 584

<212> DNA

<213> Homo sapiens

290

<400> 116

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agctggatgc actgctggtc ttcccaggcc aagtggctca actctcctgc 200
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aaaatgggtt aataatattc aacatgtcaa caac 584

<210> 117 <211> 123 <212> PRT

<213> Homo sapiens

<400> 117

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Ser Val Ser Gln Thr Val Leu Ala Gln Leu Asp Ala Leu Leu Val 20 25 30

Phe Pro Gly Gln Val Ala Gln Leu Ser Cys Thr Leu Ser Pro Gln 35 40 45

His Val Thr Ile Arg Asp Tyr Gly Val Ser Trp Tyr Gln Gln Arg 50 55 60

Ala Gly Ser Ala Pro Arg Tyr Leu Leu Tyr Tyr Arg Ser Glu Glu 65 70 75

Asp His His Arg Pro Ala Asp Ile Pro Asp Arg Phe Ser Ala Ala 80 85 90

Lys Asp Glu Ala His Asn Ala Cys Val Leu Thr Ile Ser Pro Val  $95 \hspace{1.5cm} 100 \hspace{1.5cm} 105$ 

Gln Pro Glu Asp Asp Ala Asp Tyr Tyr Cys Ser Val Gly Tyr Gly
110 115

Phe Ser Pro

<400> 118

<210> 118 <211> 3402 <212> DNA <213> Homo sapiens

102

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<210> 119

<211> 504

<212> PRT

<213> Homo sapiens

<400> 119

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Met Ala Asp Lys Val Val Pro Arg Gln Val Ala Arg Leu Gly Arg 35 40 45

Thr Val Arg Leu Gln Cys Pro Val Glu Gly Asp Pro Pro Pro Leu
50 55 60

Thr Met Trp Thr Lys Asp Gly Arg Thr Ile His Ser Gly Trp Ser
65 70 75

Arg Phe Arg Val Leu Pro Gln Gly Leu Lys Val Lys Gln Val Glu 80 85 90

Arg Glu Asp Ala Gly Val Tyr Val Cys Lys Ala Thr Asn Gly Phe 95 100 105

Gly Ser Leu Ser Val Asn Tyr Thr Leu Val Val Leu Asp Asp Ile 110 115 120

Ser Pro Gly Lys Glu Ser Leu Gly Pro Asp Ser Ser Ser Gly Gly
125 130 135

Gln Glu Asp Pro Ala Ser Gln Gln Trp Ala Arg Pro Arg Phe Thr 140 145 150

Gln Pro Ser Lys Met Arg Arg Arg Val Ile Ala Arg Pro Val Gly
155 160 165

Ser Ser Val Arg Leu Lys Cys Val Ala Ser Gly His Pro Arg Pro

Asp Ile Thr Trp Met Lys Asp Asp Gln Ala Leu Thr Arg Pro Glu 185 190 195

Ala Ala Glu Pro Arg Lys Lys Lys Trp Thr Leu Ser Leu Lys Asn 200 205

Leu Arg Pro Glu Asp Ser Gly Lys Tyr Thr Cys Arg Val Ser Asn 215 220 225

Arg Ala Gly Ala Ile Asn Ala Thr Tyr Lys Val Asp Val Ile Gln
230 235 240

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Arg Thr Arg Ser Lys Pro Val Leu Thr Gly Thr His Pro Val Asn
Thr Thr Val Asp Phe Gly Gly Thr Thr Ser Phe Gln Cys Lys Val
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Arg Ser Asp Val Lys Pro Val Ile Gln Trp Leu Lys Arg Val Glu
Tyr Gly Ala Glu Gly Arg His Asn Ser Thr Ile Asp Val Gly Gly
Gln Lys Phe Val Val Leu Pro Thr Gly Asp Val Trp Ser Arg Pro
                 305
                                     310
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Asp Gly Ser Tyr Leu Asn Lys Leu Leu Ile Thr Arg Ala Arg Gln
                                     325
Asp Asp Ala Gly Met Tyr Ile Cys Leu Gly Ala Asn Thr Met Gly
                                     340
                                                         345
Tyr Ser Phe Arg Ser Ala Phe Leu Thr Val Leu Pro Asp Pro Lys
                                     355
                                                         360
 Pro Pro Gly Pro Pro Val Ala Ser Ser Ser Ala Thr Ser Leu
 Pro Trp Pro Val Val Ile Gly Ile Pro Ala Gly Ala Val Phe Ile
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                                     385
Leu Gly Thr Leu Leu Trp Leu Cys Gln Ala Gln Lys Lys Pro
                                     400
Cys Thr Pro Ala Pro Ala Pro Pro Leu Pro Gly His Arg Pro Pro
                 410
                                     415
Gly Thr Ala Arg Asp Arg Ser Gly Asp Lys Asp Leu Pro Ser Leu
                                     430
Ala Ala Leu Ser Ala Gly Pro Gly Val Gly Leu Cys Glu Glu His
Gly Ser Pro Ala Ala Pro Gln His Leu Leu Gly Pro Gly Pro Val
                                     460
Ala Gly Pro Lys Leu Tyr Pro Lys Leu Tyr Thr Asp Ile His Thr
His Thr His Thr His Ser His Thr His Ser His Val Glu Gly Lys
Val His Gln His Ile His Tyr Gln Cys
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<210> 120
<211> 20
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<sup>&</sup>lt;212> DNA

<sup>&</sup>lt;213> Artificial Sequence

<sup>&</sup>lt;220>

<sup>&</sup>lt;223> Synthetic oligonucleotide probe

<sup>&</sup>lt;400> 120

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<210> 121
<211> 21
<212> DNA
<213> Artificial Sequence
<220>
<223> Synthetic oligonucleotide probe
<400> 121
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<210> 122
<211> 45
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<220>
<223> Synthetic oligonucleotide probe
<400> 122
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<210> 123
<211> 4420
<212> DNA
<213> Homo sapiens
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gcctgggtgt tctccttcct ggtcctggaa gtcacatctg tgttggggag 200
acagacgatg ctcacccagt cagtaagaag agtccagcct gggaagaaga 250
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Asp Tyr Met Ala Cys Gln Pro Glu Ser Thr Asp Met Thr Lys Tyr 50 55 60

Leu Lys Val Lys Leu Asp Pro Pro Asp Ile Thr Cys Gly Asp Pro 65 70 75

Pro Glu Thr Phe Cys Ala Met Gly Asn Pro Tyr Met Cys Asn Asn 80 85 90

Glu Cys Asp Ala Ser Thr Pro Glu Leu Ala His Pro Pro Glu Leu 95 100 105

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Ala Ser Arg Pro Tyr Ala Phe Leu Glu Phe Asp Ser Ile Ile Gln
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Asn Gly His Thr Pro Met His Leu Glu Pro Ala Pro Asn Phe Arg
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Ile Met Cys Ala Ala Leu Asn Leu Ile Arg Gly Val His Leu Ala
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Gln Thr Ser
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<210> 136

<211> 239

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> 39, 61, 143, 209

<223> unknown base

<400> 136

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<210> 137

<211> 2300

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<210> 138

<211> 489

<212> PRT

<213> Homo sapiens

<400> 138

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Phe His Glu Arg Ile Arg Glu Cys Ile Ile Ser Thr Leu Leu Phe 20 25 30

Ala Thr Leu Tyr Ile Leu Cys His Ile Phe Leu Thr Arg Phe Lys
35 40 45

Lys Pro Ala Glu Phe Thr Thr Val Asp Asp Glu Asp Ala Thr Val 50 55 60

Asn Lys Ile Ala Leu Glu Leu Cys Thr Phe Thr Leu Ala Ile Ala 65 70 75

Leu Gly Ala Val Leu Leu Pro Phe Ser Ile Ile Ser Asn Glu 80 85 90

Val Leu Leu Ser Leu Pro Arg Asn Tyr Tyr Ile Gln Trp Leu Asn 95 100 105

Gly Ser Leu Ile His Gly Leu Trp Asn Leu Val Phe Leu Phe Pro 110 115 120

Asn Leu Ser Leu Ile Phe Leu Met Pro Phe Ala Tyr Phe Phe Thr

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Val	- Туі	r Glı	ı Thi	r Val 155	. Val	L Met	: Lei	ı Met	Let 160		ı Thi	. Lei	ı Leı	ı Val 165
Leu	ı Gly	y Met	: Val	170	Val	Ala	a Ser	Ala	11€ 175		_ Asr	Lys	s Asr	180
Ala	Asn	n Arç	g Glu	185	Lev	ı Tyr	asp	Phe	Trp		туг	: Туг	Leu	1 Pro 195
Tyr	Leu	туг	Ser	Cys 200	: Ile	e Ser	Phe	e Leu	Gly 205	v Val	. Leu	ı Let	ı Lev	1 Leu 210
Val	Cys	Thr	Pro	Leu 215	Gly	Leu	Ala	Arg	Met 220		e Ser	: Val	. Thr	Gly 225
Lys	Leu	. Leu	ı Val	. Lys 230	Pro	Arg	Leu	. Leu	Glu 235		Leu	Glu	Glu	Gln 240
Leu	Tyr	: Сув	s Ser	Ala 245	Phe	Glu	Glu	Ala	Ala 250		. Thr	Arg	Arg	7 Ile 255
Cys	Asn	Pro	Thr	Ser 260	Cys	Trp	Leu	Pro	Leu 265		Met	Glu	Leu	Leu 270
His	Arg	Gln	Val	Leu 275	Ala	Leu	Gln	Thr	Gln 280	Arg	Val	Leu	Leu	Glu 285
Lys	Arg	Arg	Lys	Ala 290	Ser	Ala	Trp	Gln	Arg 295	Asn	Leu	Gly	Tyr	Pro 300
Leu	Ala	Met	Leu	Cys 305	Leu	Leu	Val	Leu	Thr 310	Gly	Leu	Ser	Val	Leu 315
Ile	Val	Ala	Ile	His 320	Ile	Leu	Glu	Leu	Leu 325	Ile	Asp	Glu	Ala	Ala 330
Met	Pro	Arg	Gly	Met 335	Gln	Gly	Thr	Ser	Leu 340	Gly	Gln	Val	Ser	Phe 345
Ser	Lys	Leu	Gly	Ser 350	Phe	Gly	Ala	Val	Ile 355	Gln	Val	Val	Leu	Ile 360
Phe	Tyr	Leu	Met	Val 365	Ser	Ser	Val	Val	Gly 370	Phe	Tyr	Ser	Ser	Pro 375
Leu	Phe	Arg	Ser	Leu 380	Arg	Pro	Arg	Trp	His 385	Asp	Thr	Ala	Met	Thr 390
Gln	Ile	Ile	Gly	Asn 395	Cys	Val	Cys	Leu	Leu 400	Val	Leu	Ser	Ser	Ala 405
Leu	Pro	Val	Phe	Ser 410	Arg	Thr	Leu	Gly	Leu 415	Thr	Arg	Phe	Asp	Leu 420
Leu	Gly	Asp	Phe	Gly 425	Arg	Phe	Asn	Trp	Leu 430	Gly	Asn	Phe	Tyr	Ile 435
Val	Phe	Leu	Tyr	Asn	Ala	Ala	Phe	Ala	Glv	T.e.11	Thr	Thr	T.OH	Cure

440 445 450

Leu Val Lys Thr Phe Thr Ala Ala Val Arg Ala Glu Leu Ile Arg 455 460 465

Ala Phe Gly Leu Asp Arg Leu Pro Leu Pro Val Ser Gly Phe Pro 470 475 480

Gln Ala Ser Arg Lys Thr Gln His Gln 485

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<211> 294

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> 53, 57

<223> unknown base

<400> 139

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<210> 140

<211> 526

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> 197, 349

<223> unknown base

<400> 140

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<213> Artificial Sequence
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<212> DNA
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tgaggaagat gagggacagg ttqg 24
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<212> DNA
<213> Homo sapiens
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<210> 146 <211> 124

<212> PRT

<213> Homo sapiens

<400> 146

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Gly Phe Arg Phe Tyr Ser Pro Gln Lys Thr Lys Trp Tyr His Arg
50 55 60

Tyr Leu Gly Lys Glu Ile Leu Arg Glu Thr Pro Asp Asn Ile Leu 65 70 75

Glu Val Gln Glu Ser Gly Glu Tyr Arg Cys Gln Ala Gln Gly Ser 80 85 90

Pro Leu Ser Ser Pro Val His Leu Asp Phe Ser Ser Glu Met Gly 95 100 105

Phe Pro His Ala Ala Gln Ala Asn Val Glu Leu Leu Gly Ser Ser 110 115 120

Asp Leu Leu Thr

<210> 147

<211> 1621

<212> DNA

<213> Homo sapiens

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<sup>&</sup>lt;210> 148

<sup>&</sup>lt;211> 358

<sup>&</sup>lt;212> PRT

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290

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Lys Lys Gly Glu Gly Leu Pro Asn Phe Asp Asn Asn Ile Lys
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                                                          315
 Gly Ser Leu Ile Ile Thr Phe Asp Val Asp Phe Pro Lys Glu Gln
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<211> 226

<212> PRT

<213> Homo sapiens

<400> 151

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Tyr Cys Arg Pro Arg Asp Leu Leu Gln Arg Tyr Asp Ser Lys Pro

35 40 45

Ile Val Asp Leu Ile Gly Ala Met Glu Thr Gln Ser Glu Pro Ser 50 55 60

Glu Leu Glu Leu Asp Asp Val Val Ile Thr Asn Pro His Ile Glu
65 70 75

Ala Ile Leu Glu Asn Glu Asp Trp Ile Glu Asp Ala Ser Gly Leu 80 85 90

Met Ser His Cys Ile Ala Ile Leu Lys Ile Cys His Thr Leu Thr

Glu Lys Leu Val Ala Met Thr Met Gly Ser Gly Ala Lys Met Lys 110 115 120

Thr Ser Ala Ser Val Ser Asp IIe IIe Val Val Ala Lys Arg IIe 125 130 135

Ser Pro Arg Val Asp Asp Val Val Lys Ser Met Tyr Pro Pro Leu 140 145 150

Asp Pro Lys Leu Leu Asp Ala Arg Thr Thr Ala Leu Leu Leu Ser 155 160 : 165

Val Ser His Leu Val Leu Val Thr Arg Asn Ala Cys His Leu Thr 170 175 180

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<211> 1027

<212> DNA

<213> Homo sapiens

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<221> unsure

<222> 1017, 1020

<223> unknown base

<400> 152

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Leu Ala Phe Val Ile Gly Leu Glu Arg Thr Phe Arg Phe Phe

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Gly Phe Leu Leu Gly Glu Val Lys Gly Glu Ala Lys Asn Ser Ile 35 40 45

Thr Asp Ser Gln Met Asp Asp Val Glu Val Val Tyr Thr Ile Asp 50 55 60

Ile Gln Lys Tyr Ile Pro Cys Tyr Gln Leu Phe Ser Phe Tyr Asn 65 70 75

Ser Ser Gly Glu Val Asn Glu Gln Ala Leu Lys Lys Ile Leu Ser

Asn Val Lys Lys Asn Val Val Gly Trp Tyr Lys Phe Arg Arg His 95 100 105

Ser Pro Thr Phe

Ser Asp Gln Ile Met Thr Phe Arg Glu Arg Leu Leu His Lys Asn Leu Gln Glu His Phe Ser Asn Gln Asp Leu Val Phe Leu Leu Thr Pro Ser Ile Ile Thr Glu Ser Cys Ser Thr His Arg Leu Glu 140 His Ser Leu Tyr Lys Pro Gln Lys Gly Leu Phe His Arg Val Pro 160 Leu Val Val Ala Asn Leu Gly Met Ser Glu Gln Leu Gly Tyr Lys 180 Thr Val Ser Gly Ser Cys Met Ser Thr Gly Phe Ser Arg Ala Val 190 Gln Thr His Ser Ser Lys Phe Phe Glu Glu Asp Gly Ser Leu Lys 205 Glu Val His Lys Ile Asn Glu Met Tyr Ala Ser Leu Gln Glu Glu Leu Lys Ser Ile Cys Lys Lys Val Glu Asp Ser Glu Gln Ala Val Asp Lys Leu Val Lys Asp Val Asn Arg Leu Lys Arg Glu Ile Glu 245 250 Lys Arg Arg Gly Ala Gln Ile Gln Ala Ala Arg Glu Lys Asn Ile 260 265 Gln Lys Asp Pro Gln Glu Asn Ile Phe Leu Cys Gln Ala Leu Arg 280 Thr Phe Phe Pro Asn Ser Glu Phe Leu His Ser Cys Val Met Ser 295 Leu Lys Asn Arg His Val Ser Lys Ser Ser Cys Asn Tyr Asn His His Leu Asp Val Val Asp Asn Leu Thr Leu Met Val Glu His Thr 320 Asp Ile Pro Glu Ala Ser Pro Ala Ser Thr Pro Gln Ile Ile Lys 340 His Lys Ala Leu Asp Leu Asp Asp Arg Trp Gln Phe Lys Arg Ser 350 Arg Leu Leu Asp Thr Gln Asp Lys Arg Ser Lys Ala Asn Thr Gly 370 Ser Ser Asn Gln Asp Lys Ala Ser Lys Met Ser Ser Pro Glu Thr 385 Asp Glu Glu Ile Glu Lys Met Lys Gly Phe Gly Glu Tyr Ser Arg

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Ser	Leu	Gln	Ser	Lys 80	Asp	Asp	Phe	Lys	Ser 85	Val	Val	Ser	Glu	Gln 90
Cys	Asn	His	Leu	Gln 95	Ala	Val	Phe	Ala	Ser 100	Arg	Tyr	Lys	Lys	Phe 105
Asp	Glu	Phe	Phe	Lys 110	Glu	Leu	Leu	Glu	Asn 115	Ala	Glu	Lys	Ser	Leu 120
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Ser	Glu	Leu	Phe	Lys 140	Asp	Leu	Phe	Val	Glu 145	Leu	Lys	Arg	Tyr	Tyr 150
Val	Val	Gly	Asn	Val 155	Asn	Leu	Glu	Glu	Met 160	Leu	Asn	Asp	Phe	Trp 165
Ala	Arg	Leu	Leu	Glu 170	Arg	Met	Phe	Arg	Leu 175	Val	Asn	Ser	Gln	Tyr 180
His	Phe	Thr	Asp	Glu 185	Tyr	Leu	Glu	Суз	Val 190	Ser	Lys	Tyr	Thr	Glu 195
Gln	Leu	Lys	Pro	Phe 200	Gly	Asp	Val	Pro	Arg 205	Lys	Leu	Lys	Leu	Gln 210
Val	Thr	Arg	Ala	Phe 215	Val	Ala	Ala	Arg	Thr 220	Phe	Ala	Gln	Gly	Leu 225
Ala	Val	Ala	Gly	Asp 230	Val	Val	Ser	Lys	Val 235	Ser	Val	Val	Asn	Pro 240
Thr	Ala	Gln	Cys	Thr 245	His	Ala	Leu	Leu	Lys 250	Met	Ile	Tyr	Cys	Ser 255
His	Суз	Arg	Gly	Leu 260	Val	Thr	Val	Lys	Pro 265	Суѕ	Tyr	Asn	Tyr	Cys 270
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Gly Gly Gln Glu Cys Glu Cys Lys Asp Trp Phe Leu Arg Ala Pro
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Arg Arg Lys Phe Met Thr Val Ser Gly Leu Pro Lys Lys Gln Cys
65 70 75

Pro Cys Asp His Phe Lys Gly Asn Val Lys Lys Thr Arg His Gln 80 85

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ccagacgaet egggeaaaga eecaaageea gaetteeeea aatteetaag 150
ccteetggge acagagatea ttgagaatge agtegagtte ateeteeget 200
ccatgteeag gageacagga tttatggaat ttgatgataa tgaaggaaaa 250
catteateaa agtgacatee teaggacaca eecatgtgge teetggaeaa 300
teeaagagea geeaaateet gettteeag tttggeteea eaagteetee 350
aggacagage eeteaaagea acteeeaaeg agtteteagg atteaggete 400

tggcttcaac caaacagaac tcattttgaa caccctgact gcatttttgc 450 ttttagaaag ttagaataaa tatggcgctt tgggatcaca tagttgatgg 500

a 551

<210> 167

<211> 87

<212> PRT

<213> Homo sapiens

<400> 167

Met Ala Val Leu Val Leu Arg Leu Thr Val Val Leu Gly Leu Leu 1 5 10 10

Val Leu Phe Leu Thr Cys Tyr Ala Asp Asp Lys Pro Asp Lys Pro

Asp Asp Lys Pro Asp Asp Ser Gly Lys Asp Pro Lys Pro Asp Phe \$35\$

Pro Lys Phe Leu Ser Leu Leu Gly Thr Glu Ile Ile Glu Asn Ala 50 55 60

Val Glu Phe Ile Leu Arg Ser Met Ser Arg Ser Thr Gly Phe Met 65 70 75

Glu Phe Asp Asp Asn Glu Gly Lys His Ser Ser Lys 80 85

<210> 168

<211> 1371

<212> DNA

<213> Homo sapiens

<400> 168

ggacgccagc gcctgcagag gctgagcagg gaaaaagcca gtgccccagc 50 ggaagcacag ctcagagctg gtctgccatg gacatcctgg tcccactcct 100 gcagctgctg gtgctgcttc ttaccctgcc cctgcacctc atggctctgc 150 tgggctgctg gcagcccctg tgcaaaagct acttccccta cctgatggcc 200 gtgctgactc ccaagagcaa ccgcaagatg gagagcaaga aacgggagct 250 cttcagccag ataaaggggc ttacaggagc ctccgggaaa gtggccctac 300 tggagctggg ctgcggaacc ggagccaact ttcagttcta cccaccgggc 350 tgcagggtca cctgcctaga cccaaatccc cactttgaga agttcctgac 400 aaagagcatg gctgagaaca ggcacctcca atatgagcgg tttgtggtgg 450 ctcctggaga ggacatgaga cagctggctg atggctccat ggatgtggtg 500 gtetgeacte tggtgetgtg etetgtgeag ageceaagga aggteetgea 550 ggaggtccgg agagtactga gaccgggagg tgtgctcttt ttctgggagc 600 atgtggcaga accatatgga agctgggcct tcatgtggca gcaagttttc 650 gagcccacct ggaaacacat tggggatggc tgctgcctca ccagagagac 700 ctggaaggat cttgagaacg cccagttctc cgaaatccaa atggaacgac 750 agccccctcc cttgaagtgg ctacctgttg ggccccacat catgggaaag 800 gctgtcaaac aatctttccc aagctccaag gcactcattt gctccttccc 850 cageeteeaa ttagaacaag eeaceeacea geetatetat etteeactga 900 gagggaccta gcagaatgag agaagacatt catgtaccac ctactagtcc 950 ctctctcccc aacctctgcc agggcaatct ctaacttcaa tcccgccttc 1000 gacagtgaaa aagctctact tctacgctga cccagggagg aaacactagg 1050 accetgttgt atcetcaact geaagtttct ggactagtct cccaacgttt 1100

geeteceaat gttgteeett teettegtte eeatggtaaa geteeteeg 1150 ettteeteet gaggetacae eeatgegtet etaggaactg gteacaaaag 1200 teatggtgee tgeateeetg eeaageeeee etgaeeetet eteeeeaeta 1250 eeacettett eetgagetgg gggeaceagg gagaateaga gatgetgggg 1300 atgeeagage aagaeteaaa gaggeagagg ttttgttete aaatatttt 1350 taataaatag aegaaaceae g 1371

<210> 169

<211> 277

<212> PRT

<213> Homo sapiens

<400> 169

Met Asp Ile Leu Val Pro Leu Leu Gln Leu Leu Val Leu Leu Leu 1 5 10 15

Thr Leu Pro Leu His Leu Met Ala Leu Leu Gly Cys Trp Gln Pro
20 25 30

Leu Cys Lys Ser Tyr Phe Pro Tyr Leu Met Ala Val Leu Thr Pro 35 40 45

Lys Ser Asn Arg Lys Met Glu Ser Lys Lys Arg Glu Leu Phe Ser 50 55 60

Gln Ile Lys Gly Leu Thr Gly Ala Ser Gly Lys Val Ala Leu Leu 65 70 75

Glu Leu Gly Cys Gly Thr Gly Ala Asn Phe Gln Phe Tyr Pro Pro 80  $\,$  85  $\,$  90  $\,$ 

Gly Cys Arg Val Thr Cys Leu Asp Pro Asn Pro His Phe Glu Lys 95 100 105

Phe Leu Thr Lys Ser Met Ala Glu Asn Arg His Leu Gln Tyr Glu 110 115 120

Arg Phe Val Val Ala Pro Gly Glu Asp Met Arg Gln Leu Ala Asp 125 130 135

Gly Ser Met Asp Val Val Val Cys Thr Leu Val Leu Cys Ser Val 140 145 150

Gln Ser Pro Arg Lys Val Leu Gln Glu Val Arg Arg Val Leu Arg 155 160 165

Pro Gly Gly Val Leu Phe Phe Trp Glu His Val Ala Glu Pro Tyr 170 175

Gly Ser Trp Ala Phe Met Trp Gln Gln Val Phe Glu Pro Thr Trp 185 190 195

Lys His Ile Gly Asp Gly Cys Cys Leu Thr Arg Glu Thr Trp Lys 200 205 210

Asp Leu Glu Asn Ala Gln Phe Ser Glu Ile Gln Met Glu Arg Gln 215 220 225

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Pro Pro Pro Leu Lys Trp Leu Pro Val Gly Pro His Ile Met Gly 230

Lys Ala Val Lys Gln Ser Phe Pro Ser Ser Lys Ala Leu Ile Cys 255

Ser Phe Pro Ser Leu Gln Leu Glu Gln Ala Thr His Gln Pro Ile 260
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Tyr Leu Pro Leu Arg Gly Thr

<210> 170 <211> 1621 <212> DNA <213> Homo sapiens

<400> 170 gtgggattta tttgagtgca agatcgtttt ctcagtggtg gtggaagttg 50 cctcatcgca ggcagatgtt ggggctttgt ccgaacagct cccctctgcc 100 agcttctgta gataagggtt aaaaactaat atttatatga cagaagaaaa 150 agatgtcatt ccgtaaagta aacatcatca tcttggtcct ggctgttgct 200 ctcttcttac tggttttgca ccataacttc ctcagcttga gcagtttgtt 250 aaggaatgag gttacagatt caggaattgt agggcctcaa cctatagact 300 ttgtcccaaa tgctctccga catgcagtag atgggagaca agaggagatt 350 cctgtggtca tcgctgcatc tgaagacagg cttggggggg ccattgcagc 400 tataaacagc attcagcaca acactcgctc caatgtgatt ttctacattg 450 ttactctcaa caatacagca gaccatctcc ggtcctggct caacagtgat 500 tccctgaaaa gcatcagata caaaattgtc aattttgacc ctaaactttt 550 ggaaggaaaa gtaaaggagg atcctgacca gggggaatcc atgaaacctt 600 taacctttgc aaggttctac ttgccaattc tggttcccag cgcaaagaag 650 gccatataca tggatgatga tgtaattgtg caaggtgata ttcttgccct 700 ttacaataca gcactgaagc caggacatgc agctgcattt tcagaagatt 750 gtgattcagc ctctactaaa gttgtcatcc gtggagcagg aaaccagtac 800 aattacattg gctatcttga ctataaaaag gaaagaattc gtaagctttc 850 catgaaagcc agcacttgct catttaatcc tggagttttt gttgcaaacc 900 tgacggaatg gaaacgacag aatataacta accaactgga aaaatggatg 950 aaactcaatg tagaagaggg actgtatagc agaaccctgg ctggtagcat 1000 cacaacacct cctctgctta tcgtatttta tcaacagcac tctaccatcg 1050 atcctatgtg gaatgtccgc caccttggtt ccagtgctgg aaaacgatat 1100 tcacctcagt ttgtaaaggc tgccaagtta ctccattgga atggacattt 1150

gaagccatgg ggaaggactg cttcatatac tgatgtttgg gaaaaatggt 1200 atattccaga cccaacaggc aaattcaacc taatccgaag atataccgag 1250 atctcaaaca taaagtgaaa cagaatttga actgtaagca agcatttctc 1300 aggaagtcct ggaagatagc atgcatggga agtaacagtt gctaggcttc 1350 aatgcctatc ggtagcaagc catggaaaaa gatgtgtcag ctaggtaaag 1400 atgacaaact gccctgtctg gcagtcagct tcccagacag actatagact 1450 ataaatatgt ctccatctgc cttaccaagt gtttcttac tacaatgctg 1500 aatgactgga aagaagaact gatatggcta gttcagctag ctggtacaga 1550 taattcaaaa ctgctgttgg ttttaatttt gtaacctgtg gcctgatctg 1600 taaataaaac ttacatttt c 1621

<210> 171

<211> 371

<212> PRT

<213> Homo sapiens

<400> 171

Met Ser Phe Arg Lys Val Asn Ile Ile Ile Leu Val Leu Ala Val 1 5 10 15

Ala Leu Phe Leu Leu Val Leu His His Asn Phe Leu Ser Leu Ser 20 25 30

Ser Leu Leu Arg Asn Glu Val Thr Asp Ser Gly Ile Val Gly Pro 35 40 45

Gln Pro Ile Asp Phe Val Pro Asn Ala Leu Arg His Ala Val Asp
50 55 60

Gly Arg Gln Glu Glu Ile Pro Val Val Ile Ala Ala Ser Glu Asp
65 70 75

Arg Leu Gly Gly Ala Ile Ala Ile Asn Ser Ile Gln His Asn 80 85 90

Thr Arg Ser Asn Val Ile Phe Tyr Ile Val Thr Leu Asn Asn Thr 95 100 105

Ala Asp His Leu Arg Ser Trp Leu Asn Ser Asp Ser Leu Lys Ser 110 115 120

Ile Arg Tyr Lys Ile Val Asn Phe Asp Pro Lys Leu Leu Glu Gly 125 130 130

Lys Val Lys Glu Asp Pro Asp Gln Gly Glu Ser Met Lys Pro Leu 140 145 150

Thr Phe Ala Arg Phe Tyr Leu Pro Ile Leu Val Pro Ser Ala Lys 155 160 165

Lys Ala Ile Tyr Met Asp Asp Val Ile Val Gln Gly Asp Ile 170 175 180

Leu Ala Leu Tyr Asn Thr Ala Leu Lys Pro Gly His Ala Ala Ala

185 190 195 Phe Ser Glu Asp Cys Asp Ser Ala Ser Thr Lys Val Val Ile Arg 200 210 Gly Ala Gly Asn Gln Tyr Asn Tyr Ile Gly Tyr Leu Asp Tyr Lys 215 Lys Glu Arg Ile Arg Lys Leu Ser Met Lys Ala Ser Thr Cys Ser 230 235 Phe Asn Pro Gly Val Phe Val Ala Asn Leu Thr Glu Trp Lys Arg 250 Gln Asn Ile Thr Asn Gln Leu Glu Lys Trp Met Lys Leu Asn Val 260 Glu Glu Gly Leu Tyr Ser Arg Thr Leu Ala Gly Ser Ile Thr Thr Pro Pro Leu Leu Ile Val Phe Tyr Gln Gln His Ser Thr Ile Asp 295 300 Pro Met Trp Asn Val Arg His Leu Gly Ser Ser Ala Gly Lys Arg 315 Tyr Ser Pro Gln Phe Val Lys Ala Ala Lys Leu Leu His Trp Asn 320 325 Gly His Leu Lys Pro Trp Gly Arg Thr Ala Ser Tyr Thr Asp Val 335 340 Trp Glu Lys Trp Tyr Ile Pro Asp Pro Thr Gly Lys Phe Asn Leu 355 Ile Arg Arg Tyr Thr Glu Ile Ser Asn Ile Lys 365 <211> 585 <212> DNA

<210> 172

<213> Homo sapiens

<220>

<221> unsure

<222> 71, 76, 86, 91, 162, 220, 269, 281

<223> unknown base

<400> 172

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aagtaaagga ggatcctgac cagggggaat ccatgaaacc tttaaccttt 400 gcaaggttct acttgccaat tctggttccc agcgcaaaga aggccatata 450 catggatgat gatgtaattg tgcaaggtga tattcttgcc ctttacaata 500 cagcactgaa gccaggacat gcagctgcat tttcagaaga ttgtgattca 550 gcctctacta aagttgtcat ccgtggagca ggaaa 585

- <210> 173
- <211> 1866
- <212> DNA
- <213> Homo sapiens
- <400> 173

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<210> 174

<211> 823

<212> DNA

<213> Homo sapiens

<400> 174

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<210> 175

<211> 87

<212> PRT

<213> Homo sapiens

<400> 175

Met Gly Ala Ala Ile Ser Gln Gly Ala Leu Ile Ala Ile Val Cys
1 5 10 15

Asn Gly Leu Val Gly Phe Leu Leu Leu Leu Leu Trp Val Ile Leu 20 25 30

Cys Trp Ala Cys His Ser Arg Leu Pro Thr Leu Thr Leu Ser Leu 35 40 45

Asn Pro Val Pro Thr Pro Ala Leu Ala Pro Val Leu Arg Arg Pro 50 55 60

His His Pro Arg Ser Pro Ala Met Lys Ala Ala Thr Cys Cys Ser
65 70 75

Pro Glu Gly Pro Trp Pro Ser Leu Glu Pro Arg Thr 80 85

<210> 176

<211> 1660

<212> DNA

<213> Homo sapiens

<400> 176

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tgteecteaa acacetgagt getacteeet attigeateet gttttgataa 150
atgatgttga caceeteeae egaattetaa gtggaateat gtegggaaga 200
gatacaatee tteggeetgg tateeteegea ttageettgt etttggeeat 250
gatgtttace tteagattea teggeetege tegggattea eagaaggga 400
cattggttat tttgggattg ttgtttget gegggtgttt atggtggeeggaaga 250
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cagtgetget egtettgat tttgtteeta gaaatggaa eaaaattgaca 500
gttgagettt teeaaateae aaataaagee ateageagga eteeetgee 550
getgtteeag ceaetgtgga catttgeeat eeteattte tteetggtee 600
tetgggtgge tgtgetget ageetgggaa etgeaggaa teeggaea teeggaeae 700
gttggaaggeg geeaagtgga atataageee ettteggea tteeggtaea 700
gttggaegeae eatttaaattg geeteeteg gaetagtgaa tteeateettg 750

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<210> 177

<211> 445

<212> PRT

<213> Homo sapiens

<400> 177

Met Ser Gly Arg Asp Thr Ile Leu Gly Leu Cys Ile Leu Ala Leu 1 5 10 15

Ala Leu Ser Leu Ala Met Met Phe Thr Phe Arg Phe Ile Thr Thr 20 25 30

Leu Leu Val His Ile Phe Ile Ser Leu Val Ile Leu Gly Leu Leu 35 40 45

Phe Val Cys Gly Val Leu Trp Trp Leu Tyr Tyr Asp Tyr Thr Asn 50 55 60

Asp Leu Ser Ile Glu Leu Asp Thr Glu Arg Glu Asn Met Lys Cys
65 70 75

Val Leu Gly Phe Ala Ile Val Ser Thr Gly Ile Thr Ala Val Leu 80 85 90

Leu Val Leu Ile Phe Val Leu Arg Lys Arg Ile Lys Leu Thr Val

				95					100					10:
Glu	Leu	Phe	Gln	Ile 110	Thr	Asn	Lys	Ala	Ile 115	Ser	Ser	Ala	Pro	Phe 120
Leu	Leu	Phe	Gln	Pro 125	Leu	Trp	Thr	Phe	Ala 130	Ile	Leu	Ile	Phe	Phe 135
Trp	Val	Leu	Trp	Val 140	Ala	Val	Leu	Leu	Ser 145	Leu	Gly	Thr	Ala	Gly 150
Ala	Ala	Gln	Val	Met 155	Glu	Gly	Gly	Gln	Val 160	Glu	Tyr	Lys	Pro	Leu 165
Ser	Gly	Ile	Arg	Tyr 170	Met	Trp	Ser	Tyr	His 175	Leu	Ile	Gly	Leu	Ile 180
Trp	Thr	Ser	Glu	Phe 185	Ile	Leu	Ala	Cys	Gln 190	Gln	Met	Thr	Ile	Ala 195
Gly	Ala	Val	Val	Thr 200	Cys	Tyr	Phe	Asn	Arg 205	Ser	Lys	Asn	Asp	Pro 210
Pro	Asp	His	Pro	Ile 215	Leu	Ser	Ser	Leu	Ser 220	Ile	Leu	Phe	Phe	Туз 225
His	Gln	Gly	Thr	Val 230	Val	Lys	Gly	Ser	Phe 235	Leu	Ile	Ser	Val	Val 240
Arg	Ile	Pro	Arg	Ile 245	Ile	Val	Met	Tyr	Met 250	Gln	Asn	Ala	Leu	Lys 255
Glu	Gln	Gln	His	Gly 260	Ala	Leu	Ser	Arg	Tyr 265	Leu	Phe	Arg	Cys	Cys 270
Tyr	Cys	Cys	Phe	Trp 275	Cys	Leu	Asp	Lys	Tyr 280	Leu	Leu	His	Leu	Ası 285
Gln	Asn	Ala	Tyr	Thr 290	Thr	Thr	Ala	Ile	Asn 295	Gly	Thr	Asp	Phe	Су: 300
Thr	Ser	Ala	Lys	Asp 305	Ala	Phe	Lys	Ile	Leu 310	Ser	Lys	Asn	Ser	Sei 315
His	Phe	Thr	Ser	Ile 320	Asn	Cys	Phe	Gly	Asp 325		Ile	Ile	Phe	Let 330
Gly	Lys	Val	Leu	Val 335	Va1	Cys	Phe	Thr	Val 340	Phe	Gly	Gly	Leu	Met 345
Ala	Phe	Asn	Tyr	Asn 350	Arg	Ala	Phe	Gln	Val 355	Trp	Ala	Val	Pro	Let 360
Leu	Leu	Val	Ala	Phe 365	Phe	Ala	Tyr	Leu	Val 370	Ala	His	Ser	Phe	Let 375
Ser	Val	Phe	Glu	Thr 380	Val	Leu	Asp	Ala	Leu 385	Phe	Leu	Cys	Phe	Ala 390
Val	Asp	Leu	Glu	Thr 395	Asn	Asp	Gly	Ser	Ser 400	Glu	Lys	Pro	Tyr	Phe 405
Met	Asp	Gln	Glu	Phe	Leu	Ser	Phe	Val	Lvs	Ara	Ser	Asn	Lvs	Lei

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410 415 420

Asn Asn Ala Arg Ala Gln Gln Asp Lys His Ser Leu Arg Asn Glu 425 430 435

Glu Gly Thr Glu Leu Gln Ala Ile Val Arg 440 445

<210> 178

<211> 2773

<212> DNA

<213> Homo sapiens

<400> 178

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Gly Asp Pro Asn Cys Lys Ile Asp Leu Ser Phe Leu Ile Asp Gly

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Pro	Asp	Ile	Leu	Asn 560	Ala	Ile	Lys	Arg	Val 565	Gly	Tyr	Trp	Ser	Gly 570
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			Ser	590					595					600
Thr	Asp	Gly	Arg	Ser	Tyr	Asp	Asp	Val	Arg	Ile	Pro	Ala	Met	Ala

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Ala Ala Gln Glu Leu Glu Val Ile Ala Thr His Pro Ala Arg 645

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Pro Arg Asn

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<212> PRT

<213> Homo sapiens

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35 40

Asp Thr Leu Leu Ile Leu Gly Asn Val Ser Glu Phe Gln Arg Val 50 55 60

Val Glu Val Leu Gln Asp Ser Val Asp Phe Asp Ile Asp Val Asn 65 70 75

Ala Ser Val Phe Glu Thr Asn Ile Arg Val Val Gly Gly Leu Leu 80 85 90

Ser Ala His Leu Leu Ser Lys Lys Ala Gly Val Glu Val Glu Ala 95 100 105

Gly Trp Pro Cys Ser Gly Pro Leu Leu Arg Met Ala Glu Glu Ala 110 115 120

Ala Arg Lys Leu Pro Ala Phe Gln Thr Pro Thr Gly Met Pro

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Pro	Val	Thr	Cys	Thr 155	Ala	Gly	Ile	Gly	Thr 160	Phe	Ile	Val	Glu	Phe 165
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Pro	Thr	Asn	Phe	Ile 410	His	Asn	Asn	Gly	Ser 415	Thr	Phe	Asp	Ala	Val 420
Ile	Thr	Pro	Tyr	Gly 425	Glu	Cys	Ile	Leu	Gly 430	Ala	Gly	Gly	Tyr	Ile 435
Phe	Asn	Thr	Glu	Ala	His	Pro	Tle	Asp	Len	Ala	Ala	T,e11	His	Cvs

440 445 450 Cys Gln Arg Leu Lys Glu Glu Gln Trp Glu Val Glu Asp Leu Met Arg Glu Phe Tyr Ser Leu Lys Arg Ser Arg Ser Lys Phe Gln Lys 470 480 Asn Thr Val Ser Ser Gly Pro Trp Glu Pro Pro Ala Arg Pro Gly 490 Thr Leu Phe Ser Pro Glu Asn His Asp Gln Ala Arg Glu Arg Lys 500 Pro Ala Lys Gln Lys Val Pro Leu Leu Ser Cys Pro Ser Gln Pro Phe Thr Ser Lys Leu Ala Leu Leu Gly Gln Val Phe Leu Asp Ser 530 535 Ser

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<sup>&</sup>lt;220>

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<sup>&</sup>lt;223> Signal peptide

<sup>&</sup>lt;220>

<sup>&</sup>lt;221> N-glycosylation sites

<sup>&</sup>lt;222> 40-43, 134-137

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Thr Asn Met Lys His Leu Leu Met Trp Ser Pro Val Ile Ala Pro
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                                      55
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                                                         120
Thr Ser Ala Trp Ser Ile Leu Lys His Pro Phe Asn Arg Asn Ser
Thr Ile Leu Thr Arg Pro Gly Met Glu Ile Thr Lys Asp Gly Phe
                                     145
His Leu Val Ile Glu Leu Glu Asp Leu Gly Pro Gln Phe Glu Phe
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Leu Val Ala Tyr Trp Arg Arg Glu Pro Gly Ala Glu Glu His Val
Lys Met Val Arg Ser Gly Gly Ile Pro Val His Leu Glu Thr Met
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                                                         195
Glu Pro Gly Ala Ala Tyr Cys Val Lys Ala Gln Thr Phe Val Lys
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215

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<211> 187

<212> PRT

<213> Homo sapiens

<400> 189

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Ala Ala Cys Ala Gl<br/>n Glu Glu Gln Asp Phe Tyr Asp Phe Lys Ala 20  $\phantom{000}25\phantom{000}$  30

Val Asn Ile Arg Gly Lys Leu Val Ser Leu Glu Lys Tyr Arg Gly 35 40 45

Ser Val Ser Leu Val Val As<br/>n Val Ala Ser Glu Cys Gly Phe Thr $50~{\rm 55}~{\rm 60}$ 

Pro His His Phe Asn Val Leu Ala Phe Pro Cys Asn Gln Phe Gly 80 85

Gln Gln Glu Pro Asp Ser Asn Lys Glu Ile Glu Ser Phe Ala Arg 95 100 105

Arg Thr Tyr Ser Val Ser Phe Pro Met Phe Ser Lys Ile Ala Val 110  $\phantom{000}$  115  $\phantom{000}$  120

Thr Gly Thr Gly Ala His Pro Ala Phe Lys Tyr Leu Ala Gln Thr 125 130 135

Ser Gly Lys Glu Pro Thr Trp Asn Phe Trp Lys Tyr Leu Val Ala 140 145 150

Pro Asp Gly Lys Val Val Gly Ala Trp Asp Pro Thr Val Ser Val

160 165 155 Glu Glu Val Arg Pro Gln Ile Thr Ala Leu Val Arg Lys Leu Ile Leu Leu Lys Arg Glu Asp Leu 185 <210> 190 <211> 24 <212> DNA <213> Artificial Sequence <220> <223> Synthetic oligonucleotide probe <400> 190 gcaggacttc tacgacttca aggc 24 <210> 191 <211> 24 <212> DNA <213> Artificial Sequence <220> <223> Synthetic oligonucleotide probe <400> 191 agtctgggcc aggtacttga aggc 24 <210> 192 <211> 50 <212> DNA <213> Artificial Sequence <220> <223> Synthetic oligonucleotide probe <400> 192 caacatccgg ggcaaactgg tgtcgctgga gaagtaccgc ggatcggtgt 50 <210> 193 <211> 2187 <212> DNA <213> Homo sapiens <400> 193 cggacgcgtg ggcgggccgg gacgcagggc aaagcgagcc atggctgtct 50 acgtcgggat gctgcgcctg gggaggctqt gcgccgggag ctcgggggtg 100 ctgggggccc gggccgccct ctctcggagt tggcaggaag ccaggttgca 150 gggtgtccgc ttcctcagtt ccagagaggt ggatcgcatg gtctccacgc 200 ccatcggagg cctcagctac gttcaggggt gcaccaaaaa gcatcttaac 250

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<210> 194

<211> 615

<212> PRT

<213> Homo sapiens

<400> 194

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Trp Gln Glu Ala Arg Leu Gln Gly Val Arg Phe Leu Ser Ser Arg 35 40 45

Glu Val Asp Arg Met Val Ser Thr Pro Ile Gly Gly Leu Ser Tyr
50 55 60

Val Gln Gly Cys Thr Lys Lys His Leu Asn Ser Lys Thr Val Gly 65 70 75

Gln Cys Leu Glu Thr Thr Ala Gln Arg Val Pro Glu Arg Glu Ala 80 85 90

Leu Val Val Leu His Glu Asp Val Arg Leu Thr Phe Ala Gln Leu 95 100 105

Lys Glu Glu Val Asp Lys Ala Ala Ser Gly Leu Leu Ser Ile Gly 110 115 120

Leu Cys Lys Gly Asp Arg Leu Gly Met Trp Gly Pro Asn Ser Tyr 125 130 135

Ala Trp Val Leu Met Gln Leu Ala Thr Ala Gln Ala Gly Ile Ile 140 145 150

Leu Val Ser Val Asn Pro Ala Tyr Gln Ala Met Glu Leu Glu Tyr 155 160 165

Val Leu Lys Lys Val Gly Cys Lys Ala Leu Val Phe Pro Lys Gln 170 175 180

Phe Lys Thr Gln Gln Tyr Tyr Asn Val Leu Lys Gln Ile Cys Pro 185 190 195

Glu Val Glu Asn Ala Gln Pro Gly Ala Leu Lys Ser Gln Arg Leu 200 205 210

Pro Asp Leu Thr Thr Val Ile Ser Val Asp Ala Pro Leu Pro Gly 215 220 225

Thr Leu Leu Leu Asp Glu Val Val Ala Ala Gly Ser Thr Arg Gln 230 235 240

His Leu Asp Gln Leu Gln Tyr Asn Gln Gln Phe Leu Ser Cys His

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Ile	e Leu	Gly	Glu	Arg 290	Leu	Lys	E Let	His	Glu 295		Thr	Pro	Glu	Gln 300
Leu	Arg	Met	: Ile	Leu 305		Asr	n Pro	Leu	Tyr 310		Cys	Leu	ı Gly	Ser 315
Val	Ala	. Gly	Thr	Met 320	Met	Cys	Leu	Met	Tyr 325		Ala	Thr	Leu	330
Leu	Ala	Ser	Pro	Ile 335	Phe	Asn	Gly	Lys	Lys 340		Leu	Glu	Ala	Ile 345
Ser	Arg	Glu	Arg	Gly 350	Thr	Phe	e Leu	Tyr	Gly 355	Thr	Pro	Thr	Met	Phe 360
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Glu	Asp	Phe	Phe	His 530	Thr	His	Pro	Lys	Val 535	Gln	Glu	Val	Gln	Val 540
Val	Gly	Val	Lys	Asp 545	Asp	Arg	Met	Gly	Glu 550	Glu	Ile	Cys	Ala	Cys 555
Ile	Arg	Leu	Lys	Asp	Gly	Glu	Glu	Thr	Thr	Val	Glu	Glu	Ile	Lys

Ala Phe Cys Lys Gly Lys Ile Ser His Phe Lys Ile Pro Lys Tyr 585

Ile Val Phe Val Thr 590 Tyr Pro Leu Thr 1le Ser Gly Lys Ile 600

Gln Lys Phe Lys Leu Arg Glu Gln Met Glu Arg His Leu Asn Leu 615

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<211> 642

<212> DNA

<213> Homo sapiens

<400> 195

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<210> 196

<211> 1575

<212> DNA

<213> Homo sapiens

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<211> 346

<211> 340 <212> PRT

<213> Homo sapiens

<400> 197

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Ala Gly Trp Leu Leu Leu Leu Leu Arg Gly Gly Ala Gln Ala 20 25 30

Leu Glu Cys Tyr Ser Cys Val Gln Lys Ala Asp Asp Gly Cys Ser

35 40 45

Pro Asn Lys Met Lys Thr Val Lys Cys Ala Pro Gly Val Asp Val Cys Thr Glu Ala Val Gly Ala Val Glu Thr Ile His Gly Gln Phe Ser Leu Ala Val Arg Gly Cys Gly Ser Gly Leu Pro Gly Lys Asn Asp Arg Gly Leu Asp Leu His Gly Leu Leu Ala Phe Ile Gln Leu 100 Gln Gln Cys Ala Gln Asp Arg Cys Asn Ala Lys Leu Asn Leu Thr 110 115 Ser Arg Ala Leu Asp Pro Ala Gly Asn Glu Ser Ala Tyr Pro Pro 130 Asn Gly Val Glu Cys Tyr Ser Cys Val Gly Leu Ser Arg Glu Ala Cys Gln Gly Thr Ser Pro Pro Val Val Ser Cys Tyr Asn Ala Ser 160 Asp His Val Tyr Lys Gly Cys Phe Asp Gly Asn Val Thr Leu Thr 175 Ala Ala Asn Val Thr Val Ser Leu Pro Val Arg Gly Cys Val Gln 185 190 Asp Glu Phe Cys Thr Arg Asp Gly Val Thr Gly Pro Gly Phe Thr Leu Ser Gly Ser Cys Cys Gln Gly Ser Arg Cys Asn Ser Asp Leu Arg Asn Lys Thr Tyr Phe Ser Pro Arg Ile Pro Pro Leu Val Arg 235 Leu Pro Pro Pro Glu Pro Thr Thr Val Ala Ser Thr Thr Ser Val Thr Thr Ser Thr Ser Ala Pro Val Arg Pro Thr Ser Thr Thr Lys 260 265 Pro Met Pro Ala Pro Thr Ser Gln Thr Pro Arg Gln Gly Val Glu His Glu Ala Ser Arg Asp Glu Glu Pro Arg Leu Thr Gly Gly Ala 295 Ala Gly His Gln Asp Arg Ser Asn Ser Gly Gln Tyr Pro Ala Lys 310 Gly Gly Pro Gln Gln Pro His Asn Lys Gly Cys Val Ala Pro Thr Ala Gly Leu Ala Ala Leu Leu Leu Ala Val Ala Ala Gly Val Leu 335 340

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<210> 199

<211> 120

<212> PRT

<213> Homo sapiens

<400> 199

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Val Leu Ala Ser Ala Ala Glu Lys Glu Lys Glu Met Asp Pro Phe 20 25 30

His Tyr Asp Tyr Gln Thr Leu Arg Ile Gly Gly Leu Val Phe Ala 35 40 45

Val Val Leu Phe Ser Val Gly Ile Leu Leu Ile Leu Ser Arg Arg 50 55 60

Cys Lys Cys Ser Phe Asn Gln Lys Pro Arg Ala Pro Gly Asp Glu 65 70 75

Glu Ala Gln Val Glu Asn Leu Ile Thr Ala Asn Ala Thr Glu Pro 80 85 90

Gln Lys Gln Arg Thr Glu Val Gln Pro Ser Gly Gly Ser Leu Trp 95 100 105

Asn Leu Arg Arg Leu Leu Glu Pro Leu Asp Ala Asn Val Asp Ala 110 115 120

<210> 200

<211> 415

<212> DNA

<213> Homo sapiens

<400> 200

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- <210> 201
- <211> 99
- <212> PRT
- <213> Homo sapiens

## <400> 201

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Val Leu His Ser Ala Gln Gly Ala Thr Leu Gly Gly Pro Glu Glu 20 25 30

Glu Ser Thr Ile Glu Asn Tyr Ala Ser Arg Pro Glu Ala Phe Asn 35 40

Thr Pro Phe Leu Asn Ile Asp Lys Leu Arg Ser Ala Phe Lys Ala 50 55 60

Asp Glu Phe Leu Asn Trp His Ala Leu Phe Glu Ser Ile Lys Arg
65 70 75

Lys Leu Pro Phe Leu Asn Trp Asp Ala Phe Pro Lys Leu Lys Gly 80 85 90

Leu Arg Ser Ala Thr Pro Asp Ala Gln 95

- <210> 202
- <211> 678
- <212> DNA
- <213> Homo sapiens

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Cys Gly Phe Ala Gly His Ser

<210> 204 <211> 1917 <212> DNA <213> Homo sapiens

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<211> 392

<212> PRT

<213> Homo sapiens

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Phe Leu Leu Pro Ser Ala Gln Gly Arg Gln Lys Glu Ser Gly Ser 20 25 30

Lys Trp Lys Val Phe Ile Asp Gln Ile Asn Arg Ser Leu Glu Asn 35 40 45

Tyr Glu Pro Cys Ser Ser Gln Asn Cys Ser Cys Tyr His Gly Val 50 55 60

Ile Glu Glu Asp Leu Thr Pro Phe Arg Gly Gly Ile Ser Arg Lys 65 70 75

Met Met Ala Glu Val Val Arg Arg Lys Leu Gly Thr His Tyr Gln 80 85 90

Ile Thr Lys Asn Arg Leu Tyr Arg Glu Asn Asp Cys Met Phe Pro

				95	5				100					105
Ser	Arg	g Cys	Ser	Gly 110	v Val	. Glu	His	Phe	lle 115		Glu	ı Val	. Ile	Gly 120
Arg	, Leu	Pro	Asp	Met 125	Glu	. Met	: Val	. Ile	Asn 130		Arg	Asp	Туг	Pro 135
Gln	Val	. Pro	Lys	Trp 140	Met	Glu	Pro	Ala	Ile 145	Pro	Val	Phe	e Ser	Phe 150
Ser	Lys	Thr	Ser	Glu 155	Tyr	His	Asp	Ile	Met 160	Tyr	Pro	Ala	Trp	Thr 165
Phe	Trp	Glu	Gly	Gly 170	Pro	Ala	Val	Trp	Pro 175	Ile	Tyr	Pro	Thr	Gly 180
Leu	Gly	Arg	Trp	Asp 185	Leu	Phe	Arg	Glu	Asp 190	Leu	Val	Arg	Ser	Ala 195
Ala	Gln	Trp	Pro	Trp 200	Lys	Lys	Lys	Asn	Ser 205	Thr	Ala	Tyr	Phe	Arg 210
Gly	Ser	Arg	Thr	Ser 215	Pro	Glu	Arg	Asp	Pro 220	Leu	Ile	Leu	Leu	Ser 225
Arg	Lys	Asn	Pro	Lys 230	Leu	Val	Asp	Ala	Glu 235	Tyr	Thr	Lys	Asn	Gln 240
Ala	Trp	Lys	Ser	Met 245	Lys	Asp	Thr	Leu	Gly 250	Lys	Pro	Ala	Ala	Lys 255
Asp	Val	His	Leu	Val 260	Asp	His	Cys	Lys	Tyr 265	Lys	Tyr	Leu	Phe	Asn 270
		Gly		275					280					285
Cys	Gly	Ser	Leu	Val 290	Phe	His	Val	Gly	Asp 295	Glu	Trp	Leu	Glu	Phe 300
Phe	Tyr	Pro	Gln	Leu 305	Lys	Pro	Trp	Val	His 310	Tyr	Ile	Pro	Val	Lys 315
Thr	Asp	Leu	Ser	Asn 320	Val	Gln	Glu	Leu	Leu 325	Gln	Phe	Val	Lys	Ala 330
Asn	Asp	Asp	Val	Ala 335	Gln	Glu	Ile	Ala	Glu 340	Arg	Gly	Ser	Gln	Phe 345
Ile	Arg	Asn	His	Leu 350	Gln	Met	Asp	Asp	Ile 355	Thr	Cys	Tyr	Trp	Glu 360
Asn	Leu	Leu	Ser	Glu 365	Tyr	Ser	Lys	Phe	Leu 370	Ser	Tyr	Asn	Val	Thr 375
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Glu	Leu													

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 Ile Leu Ala Phe Gly Thr Gly Val Glu Phe Val Arg Phe Thr Ser
 Leu Arg Pro Leu Leu Gly Gly Ile Pro Glu Ser Gly Gly Pro Asp
 Ala Arg Gln Gly Trp Leu Ala Ala Leu Gln Asp Arg Ser Ile Leu
 Ala Pro Leu Ala Trp Asp Leu Gly Leu Leu Leu Phe Val Gly
 Gln His Ser Leu Met Ala Ala Glu Arg Val Lys Ala Trp Thr Ser
 Arg Tyr Phe Gly Val Leu Gln Arg Ser Leu Tyr Val Ala Cys Thr
 Ala Leu Ala Leu Gln Leu Val Met Arg Tyr Trp Glu Pro Ile Pro
                 110
                                     115
 Lys Gly Pro Val Leu Trp Glu Ala Arg Ala Glu Pro Trp Ala Thr
 Trp Val Pro Leu Cys Phe Val Leu His Val Ile Ser Trp Leu
                 140
                                     145
 Leu Ile Phe Ser Ile Leu Leu Val Phe Asp Tyr Ala Glu Leu Met
                                     160
Gly Leu Lys Gln Val Tyr Tyr His Val Leu Gly Leu Gly Glu Pro
                                     175
 Leu Ala Leu Lys Ser Pro Arg Ala Leu Arg Leu Phe Ser His Leu
                 185
 Arg His Pro Val Cys Val Glu Leu Leu Thr Val Leu Trp Val Val
                                     205
 Pro Thr Leu Gly Thr Asp Arg Leu Leu Leu Ala Phe Leu Leu Thr
                 215
                                     220
 Leu Tyr Leu Gly Leu Ala His Gly Leu Asp Gln Gln Asp Leu Arg
 Tyr Leu Arg Ala Gln Leu Gln Arg Lys Leu His Leu Leu Ser Arg
 Pro Gln Asp Gly Glu Ala Glu
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<210> 208 <211> 2095

## <213> Homo sapiens

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<210> 209

<211> 331

<212> PRT

<213> Homo sapiens

<400> 209

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Arg Ser Leu Lys Trp Ser Leu Leu Leu Ser Leu Leu Ser Phe 20 25 30

Phe Val Met Trp Tyr Leu Ser Leu Pro His Tyr Asn Val Ile Glu 35 40 45

Arg Val Asn Trp Met Tyr Phe Tyr Glu Tyr Glu Pro Ile Tyr Arg
50 55 60

Gln Asp Phe His Phe Thr Leu Arg Glu His Ser Asn Cys Ser His
65 70 75

Gln Asn Pro Phe Leu Val Ile Leu Val Thr Ser His Pro Ser Asp 80 85 90

Val Lys Ala Arg Gln Ala Ile Arg Val Thr Trp Gly Glu Lys Lys 95 100 105

Ser Trp Trp Gly Tyr Glu Val Leu Thr Phe Phe Leu Leu Gly Gln
110 115 120

Glu Ala Glu Lys Glu Asp Lys Met Leu Ala Leu Ser Leu Glu Asp 125 130 130

Glu His Leu Leu Tyr Gly Asp Ile Ile Arg Gln Asp Phe Leu Asp 140 145

Thr Tyr Asn Asn Leu Thr Leu Lys Thr Ile Met Ala Phe Arg Trp
155 160 165

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Val Thr Glu Phe Cys Pro Asn Ala Lys Tyr Val Met Lys Thr Asp
                170
Thr Asp Val Phe Ile Asn Thr Gly Asn Leu Val Lys Tyr Leu Leu
Asn Leu Asn His Ser Glu Lys Phe Phe Thr Gly Tyr Pro Leu Ile
                 200
Asp Asn Tyr Ser Tyr Arg Gly Phe Tyr Gln Lys Thr His Ile Ser
                215
                                     220
Tyr Gln Glu Tyr Pro Phe Lys Val Phe Pro Pro Tyr Cys Ser Gly
                                     235
                                                         240
Leu Gly Tyr Ile Met Ser Arg Asp Leu Val Pro Arg Ile Tyr Glu
                245
                                     250
Met Met Gly His Val Lys Pro Ile Lys Phe Glu Asp Val Tyr Val
                260
                                                         270
Gly Ile Cys Leu Asn Leu Leu Lys Val Asn Ile His Ile Pro Glu
                                     280
Asp Thr Asn Leu Phe Phe Leu Tyr Arg Ile His Leu Asp Val Cys
Gln Leu Arg Arg Val Ile Ala Ala His Gly Phe Ser Ser Lys Glu
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                                     310
Ile Ile Thr Phe Trp Gln Val Met Leu Arg Asn Thr Thr Cys His
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Tyr

<210> 210

<211> 745

<212> DNA

<213> Homo sapiens

<400> 210

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ggacatttcc ttctgtggag acacggtgga gaactaaaca atttttaaa 600 gccactatgg atttagtcat ctgaatatgc tgtgcagaaa aaatatgggc 650 tccagtggtt tttaccatgt cattctgaaa tttttctcta ctagttatgt 700 ttgatttctt taagtttcaa taaaatcatt tagcattgaa aaaaa 745 <210> 211

<211> 185

<212> PRT

<213> Homo sapiens

<400> 211

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Ala Pro Ala Leu Ala Asn Tyr Asn Ile Asn Val Asn Asp Asp Asn

Asn Asn Ala Gly Ser Gly Gln Gln Ser Val Ser Val Asn Asn Glu 45

His Asn Val Ala Asn Val Asp Asn Asn Gly Trp Asp Ser Trp

Asn Ser Ile Trp Asp Tyr Gly Asn Gly Phe Ala Ala Thr Arg Leu

Phe Gln Lys Lys Thr Cys Ile Val His Lys Met Asn Lys Glu Val 85

Met Pro Ser Ile Gln Ser Leu Asp Ala Leu Val Lys Glu Lys Lys

Leu Gln Gly Lys Gly Pro Gly Gly Pro Pro Pro Lys Gly Leu Met 115

Tyr Ser Val Asn Pro Asn Lys Val Asp Asp Leu Ser Lys Phe Gly 135

Lys Asn Ile Ala Asn Met Cys Arg Gly Ile Pro Thr Tyr Met Ala 145

Glu Glu Met Gln Glu Ala Ser Leu Phe Phe Tyr Ser Gly Thr Cys 155 160

Tyr Thr Thr Ser Val Leu Trp Ile Val Asp Ile Ser Phe Cys Gly 170

Asp Thr Val Glu Asn 185

<210> 212

<211> 1706

<212> DNA

<213> Homo sapiens

<400> 212

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## aaaagt 1706

<210> 213

<211> 299

<212> PRT

<213> Homo sapiens

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Glu Thr Ile Ala Cys Ala Cys Ile Tyr Leu Ala Ala Arg Ala Leu 20 25 30

Gln Ile Pro Leu Pro Thr Arg Pro His Trp Phe Leu Leu Phe Gly
35 40

Thr Thr Glu Glu Glu Ile Gln Glu Ile Cys Ile Glu Thr Leu Arg
50 55 60

Leu Tyr Thr Arg Lys Lys Pro Asn Tyr Glu Leu Leu Glu Lys Glu
65 70 75

Val Glu Lys Arg Lys Val Ala Leu Gln Glu Ala Lys Leu Lys Ala 80 85 90

Lys Gly Leu Asn Pro Asp Gly Thr Pro Ala Leu Ser Thr Leu Gly 95 100 105

Gly Phe Ser Pro Ala Ser Lys Pro Ser Ser Pro Arg Glu Val Lys 110 115 120

Ala Glu Glu Lys Ser Pro Ile Ser Ile Asn Val Lys Thr Val Lys 125 130 135

Lys Glu Pro Glu Asp Arg Gln Gln Ala Ser Lys Ser Pro Tyr Asn 140 145 150

Gly Val Arg Lys Asp Ser Lys Arg Ser Arg Asn Ser Arg Ser Ala 155 160 165

Ser Arg Ser Arg Ser Arg Thr Arg Ser Arg Ser Arg Ser His Thr 170 175 180

Pro Arg Arg His Tyr Asn Asn Arg Arg Ser Arg Ser Gly Thr Tyr 185 190 195

Ser Ser Arg Ser Arg Ser Arg Ser Arg Ser His Ser Glu Ser Pro 200 205 210

Arg Arg His His Asn His Gly Ser Pro His Leu Lys Ala Lys His 215 220 225

Thr Arg Asp Asp Leu Lys Ser Ser Asn Arg His Gly His Lys Arg 230 235 240

Lys Lys Ser Arg Ser Arg Ser Gln Ser Lys Ser Arg Asp His Ser 245 250 255

Asp Ala Ala Lys Lys His Arg His Glu Arg Gly His His Arg Asp 260 265 270

Arg Arg Glu Arg Ser Arg Ser Phe Glu Arg Ser His Lys Ser Lys

His His Gly Gly Ser Arg Ser Gly His Gly Arg His Arg Arg 290  $\phantom{-}$  295

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<211> 730

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> 72-73, 85, 91, 127, 226, 268, 454, 484, 513, 566, 663

<223> unknown base

<400> 214

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aggggtttat cattttttga anntattcgg gtcanaattg nctttgaaaa 100

gcattgcttt ttacagaaat atattanctt tttagagtaa tttctagttt 150

ggattgtaat atgaaattat ttaaaagggc ttcgctcata tataggaaaa 200

tcgcatatgg tcctagtatt aaattnttat tgcttactga tttttttgag 250

ttaagagttg ttatatgnta gaatatgagg atgtgaatat aaataagaga 300

agaaaaaaga ataaagtaga ttgagtctcc aattttatgt aagcttcaga 350

agaactggtt tgtttacatg caagcttata gttgaaatat ttttcaggaa 400

ttacatgaat gacagtette gaaccaatgt gtttgttega tttcaaccag 450

agantatage atgtgettge atctacettg cagntagage actteagatt 500

ccgttgccaa ctngtcccca ttggtttctt ctttttggta ctacagaaga 550

ggaaatccag gaaatntgca tagaaacact taggctttat accagaaaaa 600

agccaaacta tgaattactg gaaaaagaag tagaaaaaag aaaagtagcc 650

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agccctttca accctgggtg gattttctcc 730

<210> 215

<211> 1807

<212> DNA

<213> Homo sapiens

<400> 215

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ccaccctcat gcacaggctg gcgccacact gctccttcgc gcgctggctg 150

ctctgtaacg gcagtttgtt ccgatacaag cacccgtctg aggaggagct 200

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290 295 300 Thr Arg Phe Ser Leu Leu Ser Asp Ser Ala Phe Asp Ser Gly Arg 310 Leu Trp Leu Leu Val Val Leu Cys Leu Leu Arg Leu Ala Val Thr Arg Pro His Leu Gln Ala Tyr Leu Cys Leu Ala Lys Ala Arg Val 335 Glu Gln Leu Arg Arg Glu Ala Gly Arg Ile Glu Ala Arg Glu Ile 350 355 Gln Gln Arg Val Val Arg Val Tyr Cys Tyr Val Thr Val Val Ser 365 370 Leu Gln Tyr Leu Thr Pro Leu Ile Leu Thr Leu Asn Cys Thr Leu 385 Leu Leu Lys Thr Leu Gly Gly Tyr Ser Trp Gly Leu Gly Pro Ala Pro Leu Leu Ser Pro Asp Pro Ser Ser Ala Ser Ala Ala Pro Ile 415 Gly Ser Gly Glu Asp Glu Val Gln Gln Thr Ala Ala Arg Ile Ala Gly Ala Leu Gly Gly Leu Leu Thr Pro Leu Phe Leu Arg Gly Val 440 445 Leu Ala Tyr Leu Ile Trp Trp Thr Ala Ala Cys Gln Leu Leu Ala Ser Leu Phe Gly Leu Tyr Phe His Gln His Leu Ala Gly Ser <210> 217 <211> 574 <212> DNA

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<220>

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<211> 2571

<212> DNA

<213> Homo sapiens

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<sup>&</sup>lt;211> 632

<sup>&</sup>lt;212> PRT

<sup>&</sup>lt;213> Homo sapiens

<sup>&</sup>lt;400> 219

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Arg	Arg	Ser	Gln	Asp 50	Gly	Cys	Pro	Asp	Gly 55	Cys	Ala	Ser	Leu	Thr 60
Ala	Thr	Ala	Pro	Ser 65	Pro	Glu	Val	Ser	Ala 70	Ala	Ala	Thr	Ile	Ser 75
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Ser	Ala	Glu	Asp	Gly 95	Gln	Pro	Ala	Ile	Ser 100	Pro	Val	Asp	Ser	Gly 105
Arg	Ser	Asn	Arg	Thr 110	Arg	Ala	Arg	Pro	Phe 115	Glu	Arg	Ser	Thr	Ile 120
Arg	Ser	Arg	Ser	Phe 125	Lys	Lys	Ile	Asn	Arg 130	Ala	Leu	Ser	Val	Leu 135
Arg	Arg	Thr	Lys	Ser 140	Gly	Ser	Ala	Val	Ala 145	Asn	His	Ala	Asp	Gln 150
Gly	Arg	Glu	Asn	Ser 155	Glu	Asn	Thr	Thr	Ala 160	Pro	Glu	Val	Phe	Pro 165
Arg	Leu	Tyr	His	Leu 170	Ile	Pro	Asp	Gly	Glu 175	Ile	Thr	Ser	Ile	Lys 180
Ile	Asn	Arg	Val	Asp 185	Pro	Ser	Glu	Ser	Leu 190	Ser	Ile	Arg	Leu	Val 195
Gly	Gly	Ser	Glu	Thr 200	Pro	Leu	Val	His	Ile 205	Ile	Ile	Gln	His	Ile 210
Tyr	Arg	Asp	Gly	Val 215	Ile	Ala	Arg	Asp	Gly 220	Arg	Leu	Leu	Pro	Gly 225
Asp	Ile	Ile	Leu	Lys 230	Val	Asn	Gly	Met	Asp 235	Ile	Ser	Asn	Val	Pro 240
His	Asn	Tyr	Ala	Val 245	Arg	Leu	Leu	Arg	Gln 250	Pro	Cys	Gln	Val	Leu 255
Trp	Leu	Thr	Val	Met 260	Arg	Glu	Gln	Lys	Phe 265	Arg	Ser	Arg	Asn	Asn 270
Gly	Gln	Ala	Pro	Asp 275	Ala	Tyr	Arg	Pro	Arg 280	Asp	Asp	Ser	Phe	His 285
Val	Ile	Leu	Asn	Lys 290	Ser	Ser	Pro	Glu	Glu 295	Gln	Leu	Gly	Ile	Lys 300
Leu	Val	Arg	Lys	Val 305	Asp	Glu	Pro	Gly	Val 310	Phe	Ile	Phe	Asn	Val 315
Leu	qzA	Glv	Glv	Va]	Ala	Tvr	Ara	His	Glv	Gln	Leu	Glir	Glu	Asn

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Pro	Glu	ı Sei	: Ala	Ala 350		Leu	ı Ile	e Gln	Ala 355		Glu	ı Arç	g Aro	y Val 360
His	Lev	ı Val	L Val	Ser 365	Arg	Gln	. Val	. Arg	Gln 370		Ser	Pro	Asp	375
Phe	Gln	ı Glu	a Ala	Gly 380	Trp	Asn	Ser	: Asn	Gly 385	Ser	Trp	Ser	Pro	Gly 390
Pro	Gly	g Glu	a Arg	Ser 395	Asn	Thr	Pro	Lys	Pro 400		His	Pro	Thr	: Ile 405
Thr	Cys	His	Glu	Lys 410	Val	Val	Asn	Ile	Gln 415		Asp	Pro	Gly	Glu 420
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Ser	Arg	Asp	Gly	Arg 455	Ile	Lys	Thr	Gly	Asp 460	Ile	Leu	Leu	Asn	Val 465
Asp	Gly	Val	Glu	Leu 470	Thr	Glu	Val	Ser	Arg 475	Ser	Glu	Ala	Val	Ala 480
Leu	Leu	Lys	Arg	Thr 485	Ser	Ser	Ser	Ile	Val 490	Leu	Lys	Ala	Leu	Glu 495
Val	Lys	Glu	Tyr	Glu 500	Pro	Gln	Glu	Asp	Cys 505	Ser	Ser	Pro	Ala	Ala 510
Leu	Asp	Ser	Asn	His 515	Asn	Met	Ala	Pro	Pro 520	Ser	Asp	Trp	Ser	Pro 525
Ser	Trp	Val	Met	Trp 530	Leu	Glu	Leu	Pro	Arg 535	Cys	Leu	Tyr	Asn	Cys 540
Lys	Asp	Ile	Val	Leu 545	Arg	Arg	Asn	Thr	Ala 550	Gly	Ser	Leu	Gly	Phe 555
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Phe	Ile	Lys	Ser	Ile 575	Val	Glu	Gly	Thr	Pro 580	Ala	Tyr	Asn	Asp	Gly 585
Arg	Ile	Arg	Cys	Gly 590	Asp	Ile	Leu	Leu	Ala 595	Val	Asn	Gly	Arg	Ser 600
Thr	Ser	Gly	Met	Ile 605	His	Ala	Cys	Leu	Ala 610	Arg	Leu	Leu	Lys	Glu 615
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- <213> Homo sapiens

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- <212> PRT
- <213> Homo sapiens

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- Ile Gln Ser His Gly Tyr Glu Val Phe Asn Ile Ile Ser Pro Ser 20 25 30
- Asn Asn Gly Gly Asn Val Gln Glu Thr Val Thr Ile Asp Asn Glu
  35 40
- Lys Asn Thr Ala Ile Val Asn Ile His Ala Gly Ser Cys Ser Ser 50 55 60
- Thr Thr Ile Phe Asp Tyr Lys His Gly Tyr Ile Ala Ser Arg Val 65 70 75
- Leu Ser Arg Arg Ala Cys Phe Ile Leu Lys Met Asp His Gln Asn 80 85 90

IleProProLeuAsn<br/>95AsnLeuGlnTrpTyr<br/>100IleTyrGluLysGln<br/>105AlaLeuAspAsnMet<br/>110PheSerAsnLysTyr<br/>115ThrTrpValLysTyr<br/>120AsnProLeuGluSerLeuIleLysAspValAspTrpPheLeuLeuGlySerProIleGluLysLeuCysLysHis<br/>145IleProLeuTyrLysGlyGluValValGlyAsnThrHisAsnValGlyAlaGlyGlyCysAlaLysAlaGlyLeuGlyIleLeuGlyIleSerIleCysAla

Asp Ile His Val

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<212> PRT

<213> Homo sapiens

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Ile Ala Tyr Lys Val Leu Glu Val Phe Pro Lys Gly Arg Trp Val 35 40 45

Leu Ile Thr Cys Cys Ala Pro Gln Pro Pro Pro Pro Ile Thr Tyr
50 55 60

Ser Leu Cys Gly Thr Lys Asn Ile Lys Val Ala Lys Lys Val Val
65 70 75

Lys Thr His Glu Pro Ala Ser Phe Asn Leu Asn Val Thr Leu Lys 80 85 90

Ser Ser Pro Asp Leu Leu Thr Tyr Phe Cys Arg Ala Ser Ser Thr 95 100 105

Ser Gly Ala His Val Asp Ser Ala Arg Leu Gln Met His Trp Glu 110 115 120

Leu Trp Ser Lys Pro Val Ser Glu Leu Arg Ala Asn Phe Thr Leu 125 130 135

Gln Asp Arg Gly Ala Gly Pro Arg Val Glu Met Ile Cys Gln Ala 140 145 150

Ser Ser Gly Ser Pro Pro Ile Thr Asn Ser Leu Ile Gly Lys Asp 155 160 165

Gly Gln Val His Leu Gln Gln Arg Pro Cys His Arg Gln Pro Ala 170 175 180

Asn Phe Ser Phe Leu Pro Ser Gln Thr Ser Asp Trp Phe Trp Cys 185 190 195

Gln Ala Ala Asn Asn Ala Asn Val Gln His Ser Ala Leu Thr Val 200 205 210

Val Pro Pro Gly Gly Asp Gln Lys Met Glu Asp Trp Gln Gly Pro 225 220

Leu Glu Ser Pro Ile Leu Ala Leu Pro Leu Tyr Arg Ser Thr Arg 230 235 240

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<210> 226

<211> 735

<212> DNA

<213> Homo sapiens

<400> 226

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<210> 227 <211> 115 <212> PRT

<213> Homo sapiens

<400> 227

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Phe His Leu Gln Asn His Glu Leu Trp Leu Leu Ile Lys Arg Glu 35 40 45

Phe Gly Phe Tyr Ser Lys Ser Gln Tyr Arg Thr Trp Gln Lys Lys 50 55 60

Leu Ala Glu Asp Ser Thr Trp Pro Pro Ile Asn Arg Thr Asp Tyr
65 70 75

Ser Gly Asp Gly Lys Asn Gly Phe Tyr Ile Asn Gly Gly Tyr Glu 80 85 90

Ser His Glu Gln Ile Pro Lys Arg Lys Leu Lys Leu Gly Gln 95 100 105

Pro Thr Glu Gln His Phe Trp Ala Arg Leu
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<210> 228

<211> 2185

<212> DNA

<213> Homo sapiens

<400> 228

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<210> 229

<211> 653

<212> PRT

<213> Homo sapiens

<400> 229

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				185					190					19
Phe	Asn	Leu	Lys	Tyr 200	Leu	Asn	Leu	Gly	Met 205	Суѕ	Asn	Ile	Lys	Asp 210
Met	Pro	Asn	Leu	Thr 215	Pro	Leu	Val	Gly	Leu 220	Glu	Glu	Leu	Glu	Met 225
Ser	Gly	Asn	His	Phe 230	Pro	Glu	Ile	Arg	Pro 235	Gly	Ser	Phe	His	Gl <sub>2</sub>
Leu	Ser	Ser	Leu	Lys 245	Lys	Leu	Trp	Val	Met 250	Asn	Ser	Gln	Val	Se:
Leu	Ile	Glu	Arg	Asn 260	Ala	Phe	Asp	Gly	Leu 265	Ala	Ser	Leu	Val	Gl: 270
Leu	Asn	Leu	Ala	His 275	Asn	Asn	Leu	Ser	Ser 280	Leu	Pro	His	Asp	Le:
Phe	Thr	Pro	Leu	Arg 290	Tyr	Leu	Val	Glu	Leu 295	His	Leu	His	His	Ası 300
Pro	Trp	Asn	Cys	Asp 305	Cys	Asp	Ile	Leu	Trp 310	Leu	Ala	Trp	Trp	Let 315
Arg	Glu	Tyr	Ile	Pro 320	Thr	Asn	Ser	Thr	Cys 325	Суѕ	Gly	Arg	Cys	His 330
Ala	Pro	Met	His	Met 335	Arg	Gly	Arg	Tyr	Leu 340	Val	Glu	Val	Asp	Glr 345
Ala	Ser	Phe	Gln	Cys 350	Ser	Ala	Pro	Phe	Ile 355	Met	Asp	Ala	Pro	Arg 360
Asp	Leu	Asn	Ile	Ser 365	Glu	Gly	Arg	Met	Ala 370	Glu	Leu	Lys	Cys	Arc 375
Thr	Pro	Pro	Met	Ser 380	Ser	Val	Lys	Trp	Leu 385	Leu	Pro	Asn	Gly	Th:
Val	Leu	Ser	His	Ala 395	Ser	Arg	His	Pro	Arg 400	Ile	Ser	Val	Leu	Asr 405
Asp	Gly	Thr	Leu	Asn 410	Phe	Ser	His	Val	Leu 415	Leu	Ser	Asp	Thr	Gl <sub>3</sub> 420
Val	Tyr	Thr	Cys	Met 425	Val	Thr	Asn	Val	Ala 430	Gly	Asn	Ser	Asn	Ala 435
Ser	Ala	Tyr	Leu	Asn 440	Val	Ser	Thr	Ala	Glu 445	Leu	Asn	Thr	Ser	Asr 450
Tyr	Ser	Phe	Phe	Thr 455	Thr	Val	Thr	Val	Glu 460	Thr	Thr	Glu	Ile	Ser 465
Pro	Glu	Asp	Thr	Thr 470	Arg	Lys	Tyr	Lys	Pro 475	Val	Pro	Thr	Thr	Ser 480
Thr	Gly	Tyr	Gln	Pro 485	Ala	Tyr	Thr	Thr	Ser 490	Thr	Thr	Val	Leu	Il∈ 495
Gln	Thr	Thr	Arg	Val	Pro	Lys	Gln	Val	Ala	Val	Pro	Ala	Thr	Asp

				500					505					510
Thr	Thr	Asp	Lys	Met 515	Gln	Thr	Ser	Leu	Asp 520	Glu	Val	Met	Lys	Thr 525
Thr	Lys	Ile	Ile	Ile 530	Gly	Cys	Phe	Val	Ala 535	Val	Thr	Leu	Leu	Ala 540
Ala	Ala	Met	Leu	Ile 545	Val	Phe	Tyr	Lys	Leu 550	Arg	Lys	Arg	His	Gln 555
Gln	Arg	Ser	Thr	Val 560	Thr	Ala	Ala	Arg	Thr 565	Val	Glu	Ile	Ile	Gln 570
Val	Asp	Glu	Asp	Ile 575	Pro	Ala	Ala	Thr	Ser 580	Ala	Ala	Ala	Thr	Ala 585
Ala	Pro	Ser	Gly	Val 590	Ser	Gly	Glu	Gly	Ala 595	Val	Val	Leu	Pro	Thr 600
Ile	His	Asp	His	Ile 605	Asn	Tyr	Asn	Thr	Tyr 610	Lys	Pro	Ala	His	Gly 615
Ala	His	Trp	Thr	Glu 620	Asn	Ser	Leu	Gly	Asn 625	Ser	Leu	His	Pro	Thr 630
Val	Thr	Thr	Ile	Ser 635	Glu	Pro	Tyr	Ile	Ile 640	Gln	Thr	His	Thr	Lys 645
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<213> Homo sapiens

<400> 230

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<210> 231 <211> 720 <212> PRT <213> Homo sapiens

<400> 231

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Leu Leu Leu Ile Ser Ser Leu Pro Arg Glu Tyr Thr Val Ile Asn 20 25 30

Glu Ala Cys Pro Gly Ala Ģlu Trp Asn Ile Met Cys Arg Glu Cys 35 40 45

Cys Glu Tyr Asp Gln Ile Glu Cys Val Cys Pro Gly Lys Arg Glu
50 55 60

Val Val Gly Tyr Thr Ile Pro Cys Cys Arg Asn Glu Glu Asn Glu
65 70 75

Cys Asp Ser Cys Leu Ile His Pro Gly Cys Thr Ile Phe Glu Asn 80 85 90

Cys Lys Ser Cys Arg Asn Gly Ser Trp Gly Gly Thr Leu Asp Asp 95 100 105

Phe Tyr Val Lys Gly Phe Tyr Cys Ala Glu Cys Arg Ala Gly Trp 110 115 120

Tyr Gly Gly Asp Cys Met Arg Cys Gly Gln Val Leu Arg Ala Pro 125 130 135

Lys Gly Gln Ile Leu Leu Glu Ser Tyr Pro Leu Asn Ala His Cys 140 145 150

Glu Trp Thr Ile His Ala Lys Pro Gly Phe Val Ile Gln Leu Arg 155 160 165

Phe Val Met Leu Ser Leu Glu Phe Asp Tyr Met Cys Gln Tyr Asp Tyr Val Glu Val Arg Asp Gly Asp Asn Arg Asp Gly Gln Ile Ile 185 190 Lys Arg Val Cys Gly Asn Glu Arg Pro Ala Pro Ile Gln Ser Ile Gly Ser Ser Leu His Val Leu Phe His Ser Asp Gly Ser Lys Asn Phe Asp Gly Phe His Ala Ile Tyr Glu Glu Ile Thr Ala Cys Ser Ser Ser Pro Cys Phe His Asp Gly Thr Cys Val Leu Asp Lys Ala 245 250 Gly Ser Tyr Lys Cys Ala Cys Leu Ala Gly Tyr Thr Gly Gln Arg Cys Glu Asn Leu Leu Glu Glu Arg Asn Cys Ser Asp Pro Gly Gly 275 Pro Val Asn Gly Tyr Gln Lys Ile Thr Gly Gly Pro Gly Leu Ile Asn Gly Arg His Ala Lys Ile Gly Thr Val Val Ser Phe Phe Cys Asn Asn Ser Tyr Val Leu Ser Gly Asn Glu Lys Arg Thr Cys Gln 320 325 Gln Asn Gly Glu Trp Ser Gly Lys Gln Pro Ile Cys Ile Lys Ala 335 340 Cys Arg Glu Pro Lys Ile Ser Asp Leu Val Arg Arg Arg Val Leu 350 355 Pro Met Gln Val Gln Ser Arg Glu Thr Pro Leu His Gln Leu Tyr 370 Ser Ala Ala Phe Ser Lys Gln Lys Leu Gln Ser Ala Pro Thr Lys Lys Pro Ala Leu Pro Phe Gly Asp Leu Pro Met Gly Tyr Gln His 400 Leu His Thr Gln Leu Gln Tyr Glu Cys Ile Ser Pro Phe Tyr Arg 410 415 Arg Leu Gly Ser Ser Arg Arg Thr Cys Leu Arg Thr Gly Lys Trp 425 430 Ser Gly Arg Ala Pro Ser Cys Ile Pro Ile Cys Gly Lys Ile Glu Asn Ile Thr Ala Pro Lys Thr Gln Gly Leu Arg Trp Pro Trp Gln 455 Ala Ala Ile Tyr Arg Arg Thr Ser Gly Val His Asp Gly Ser Leu 475

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His Lys Gly Ala Trp Phe Leu Val Cys Ser Gly Ala Leu Val Asn
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 Glu Arg Thr Val Val Val Ala Ala His Cys Val Thr Asp Leu Gly
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 Lys Phe Tyr Arg Asp Asp Asp Asp Glu Lys Thr Ile Gln Ser
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 Leu Gln Ile Ser Ala Ile Ile Leu His Pro Asn Tyr Asp Pro Ile
                                     550
 Leu Leu Asp Ala Asp Ile Ala Ile Leu Lys Leu Leu Asp Lys Ala
                 560
                                     565
 Arg Ile Ser Thr Arg Val Gln Pro Ile Cys Leu Ala Ala Ser Arg
                 575
                                     580
 Asp Leu Ser Thr Ser Phe Gln Glu Ser His Ile Thr Val Ala Gly
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 Trp Asn Val Leu Ala Asp Val Arg Ser Pro Gly Phe Lys Asn Asp
                                     610
 Thr Leu Arg Ser Gly Val Val Ser Val Val Asp Ser Leu Leu Cys
                 620
 Glu Glu Gln His Glu Asp His Gly Ile Pro Val Ser Val Thr Asp
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 Asn Met Phe Cys Ala Ser Trp Glu Pro Thr Ala Pro Ser Asp Ile
 Cys Thr Ala Glu Thr Gly Gly Ile Ala Ala Val Ser Phe Pro Gly
                 665
                                     670
 Arg Ala Ser Pro Glu Pro Arg Trp His Leu Met Gly Leu Val Ser
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<223> N-glycosylation sites
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<221> Xylose isomerase proteins
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10

15

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Tyr Glu Leu Asn Leu Thr Thr Asp Ser Pro Ala Thr Thr Gly Ala 35 40 45

Val Val Thr Ile Ser Ala Ser Leu Val Ala Lys Asp Asn Gly Ser 50 55 60

Leu Ala Leu Pro Ala Asp Ala His Leu Tyr Arg Phe His Trp Ile
65 70 75

His Thr Pro Leu Val Leu Thr Gly Lys Met Glu Lys Gly Leu Ser 80 85 90

Ser Thr Ile Arg Val Val Gly His Val Pro Gly Glu Phe Pro Val 95 100 105

Ser Val Trp Val Thr Ala Ala Asp Cys Trp Met Cys Gln Pro Val 110 115

Ala Arg Gly Phe Val Val Leu Pro Ile Thr Glu Phe Leu Val Gly 125 130 135

Asp Leu Val Val Thr Gln Asn Thr Ser Leu Pro Trp Pro Ser Ser 140 145 150

Tyr Leu Thr Lys Thr Val Leu Lys Val Ser Phe Leu Leu His Asp
155 160

Pro Ser Asn Phe Leu Lys Thr Ala Leu Phe Leu Tyr Ser Trp Asp 170 175 180

Phe Gly Asp Gly Thr Gln Met Val Thr Glu Asp Ser Val Val Tyr \$185\$

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Val Ala Glu Trp Glu Glu Val Glu Pro Asp Ala Thr Arg Ala Val
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Lys Gln Lys Thr Gly Asp Phe Ser Ala Ser Leu Lys Leu Gln Glu
Thr Leu Arg Gly Ile Gln Val Leu Gly Pro Thr Leu Ile Gln Thr
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                245
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Leu Thr Val Cys Trp Arg Leu Lys Pro Glu Cys Leu Pro Leu Glu
Glu Gly Glu Cys His Pro Val Ser Val Ala Ser Thr Ala Tyr Asn
Leu Thr His Thr Phe Arg Asp Pro Gly Asp Tyr Cys Phe Ser Ile
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Arg Ala Glu Asn Ile Ile Ser Lys Thr His Gln Tyr His Lys Ile
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                320
Gln Val Trp Pro Ser Arg Ile Gln Pro Ala Val Phe Ala Phe Pro
Cys Ala Thr Leu Ile Thr Val Met Leu Ala Phe Ile Met Tyr Met
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Thr Leu Arg Asn Ala Thr Gln Gln Lys Asp Met Val Glu Asn Pro
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Glu Pro Pro Ser Gly Val Arg Cys Cys Gln Met Cys Cys Gly
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<212> PRT

<213> Homo sapiens

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Gly Ile Ser Leu Thr Val Leu Phe Thr Leu Leu Leu Val Phe Ile  $20 \\ 25 \\ 30$ 

Ile Val Pro Ala Ile Phe Gly Val Ser Phe Gly Ile Arg Lys Leu 35 40 45

Tyr Met Lys Ser Leu Leu Lys Ile Phe Ala Trp Ala Thr Leu Arg
50 55 60

Met Glu Arg Gly Ala Lys Glu Lys Asn His Gln Leu Tyr Lys Pro
65 70 75

Tyr Thr Asn Gly Ile Ile Ala Lys Asp Pro Thr Ser Leu Glu Glu Glu Ile Lys Glu Ile Arg Arg Ser Gly Ser Ser Lys Ala Leu Asp Asn Thr Pro Glu Phe Glu Leu Ser Asp Ile Phe Tyr Phe Cys Arg 110 115 Lys Gly Met Glu Thr Ile Met Asp Asp Glu Val Thr Lys Arg Phe 130 Ser Ala Glu Glu Leu Glu Ser Trp Asn Leu Leu Ser Arg Thr Asn 145 Tyr Asn Phe Gln Tyr Ile Ser Leu Arg Leu Thr Val Leu Trp Gly 160 Leu Gly Val Leu Ile Arg Tyr Cys Phe Leu Leu Pro Leu Arg Ile 175 Ala Leu Ala Phe Thr Gly Ile Ser Leu Leu Val Val Gly Thr Thr 185 190 Val Val Gly Tyr Leu Pro Asn Gly Arg Phe Lys Glu Phe Met Ser Lys His Val His Leu Met Cys Tyr Arg Ile Cys Val Arg Ala Leu Thr Ala Ile Ile Thr Tyr His Asp Arg Glu Asn Arg Pro Arg Asn 235 Gly Gly Ile Cys Val Ala Asn His Thr Ser Pro Ile Asp Val Ile 245 250 Ile Leu Ala Ser Asp Gly Tyr Tyr Ala Met Val Gly Gln Val His 260 265 Gly Gly Leu Met Gly Val Ile Gln Arg Ala Met Val Lys Ala Cys 280 Pro His Val Trp Phe Glu Arg Ser Glu Val Lys Asp Arg His Leu 290 Val Ala Lys Arg Leu Thr Glu His Val Gln Asp Lys Ser Lys Leu 310 Pro Ile Leu Ile Phe Pro Glu Gly Thr Cys Ile Asn Asn Thr Ser 330 Val Met Met Phe Lys Lys Gly Ser Phe Glu Ile Gly Ala Thr Val 340 Tyr Pro Val Ala Ile Lys Tyr Asp Pro Gln Phe Gly Asp Ala Phe Trp Asn Ser Ser Lys Tyr Gly Met Val Thr Tyr Leu Leu Arg Met 365 370 Met Thr Ser Trp Ala Ile Val Cys Ser Val Trp Tyr Leu Pro Pro

385

Met Thr Arg Glu Ala Asp Glu Asp Ala Val Gln Phe Ala Asn Arg 405

Val Lys Ser Ala Ile Ala Arg Gln Gly Gly Leu Val Asp Leu Leu 420

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Lys Asp Arg Ser Arg Ser 455

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Glu Met Glu Glu Lys Ala Ala Pro Leu Lys Glu Glu Met Ala
His His Ala Leu Leu Arg Glu Ser Trp Glu Ala Ala Gln Glu Thr
Trp Glu Asp Lys Arg Arg Gly Leu Thr Leu Pro Pro Gly Phe Lys
Ala Gln Asn Gly Ile Ala Ile Met Val Tyr Thr Asn Ser Ser Asn
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Thr Leu Tyr Trp Glu Leu Asn Gln Ala Val Arg Thr Gly Gly Gly
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Ser Arg Glu Leu Tyr Met Arg His Phe Pro Phe Lys Ala Leu His
Phe Tyr Leu Ile Arg Ala Leu Gln Leu Leu Arg Gly Ser Gly Gly
Cys Ser Arg Gly Pro Gly Glu Val Val Phe Arg Gly Val Gly Ser
Leu Arg Phe Glu Pro Lys Arg Leu Gly Asp Ser Val Arg Leu Gly
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Gln Phe Ala Ser Ser Ser Leu Asp Lys Ala Val Ala His Arg Phe
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Gly Glu Lys Arg Arg Gly Cys Val Ser Ala Pro Gly Val Gln Leu
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Lys	Gln	Val	Asp	Ser 50	Ile	Val	Trp	Thr	Phe 55	Asn	Thr	Thr	Pro	Leu 60
Val	Thr	Ile	Gln	Pro 65	Glu	Gly	Gly	Thr	Ile 70	Ile	Val	Thr	Gln	Asn 75
Arg	Asn	Arg	Glu	Arg 80	Val	Asp	Phe	Pro	Asp 85	Gly	Gly	Tyr	Ser	Leu 90
Lys	Leu	Ser	Lys	Leu 95	Lys	Lys	Asn	Asp	Ser 100	Gly	Ile	Tyr	Tyr	Val 105
Gly	Ile	Tyr	Ser	Ser 110	Ser	Leu	Gln	Gln	Pro 115	Ser	Thr	Gln	Glu	Tyr 120
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Gly	Leu	Gln	Ser	Asn 140	Lys	Asn	Gly	Thr	Cys 145	Val	Thr	Asn	Leu	Thr 150
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Pro	Ile	Ser	Trp	Arg 185	Trp	Gly	Glu	Ser	Asp 190	Met	Thr	Phe	Ile	Cys 195
Val	Ala	Arg	Asn	Pro 200	Val	Ser	Arg	Asn	Phe 205	Ser	Ser	Pro	Ile	Leu 210
Ala	Arg	Lys	Leu	Cys 215	Glu	Gly	Ala	Ala	Asp 220	Asp	Pro	Asp	Ser	Ser 225
Met	Val	Leu	Leu	Суs 230	Leu	Leu	Leu	Val	Pro 235	Leu	Leu	Leu	Ser	Leu 240
Phe	Val	Leu	Gly	Leu 245	Phe	Leu	Trp	Phe	Leu 250	Lys	Arg	Glu	Arg	Gln 255
Glu	Glu	Tyr	Ile	Glu 260	Glu	Lys	Lys	Arg	Val 265	Asp	Ile	Cys	Arg	Glu 270
Thr	Pro	Asn	Ile	Cys 275	Pro	His	Ser	Gly	Glu 280	Asn	Thr	Glu	Tyr	Asp 285
Thr	Ile	Pro	His	Thr 290	Asn	Arg	Thr	Ile	Leu 295	Lys	Glu	Asp	Pro	Ala 300
Asn	Thr	Va1	Tyr	Ser 305	Thr	Val	Glu	Ile	Pro 310	Lys	Lys	Met	Glu	Asn 315
Pro	His	Ser	Leu	Leu	Thr	Met	Pro	Asp	Thr	Pro	Ara	Len	Phe	Ala

320

325

330

Tyr Glu Asn Val II

<210> 254

<211> 1053

<212> DNA

<213> Homo sapiens

<400> 254

Mary design

Mary Hard

4. 1

Mary Jan

Lui,

ļ.

Hara Maria

111

\$+#=

ctggttcccc aacatgcctc accctcatct atatcctttg geagetcaca 50 gggtcagcag cctctggacc cgtgaaagag ctggtcggtt ccgttggtgg 100 ggccgtgact ttccccctga agtccaaagt aaagcaagtt gactctattg 150 tetggaeett eaacacaace eetettgtea eeatacagee agaaggggge 200 actatcatag tgacccaaaa tcgtaatagg gaqagagtag acttcccaga 250 tggaggctac tccctgaagc tcagcaaact gaagaagaat gactcaggga 300 tctactatgt ggggatatac agctcatcac tccagcagcc ctccacccag 350 gagtacgtgc tgcatgtcta cgagcacctg tcaaagccta aagtcaccat 400 gggtctgcag agcaataaga atggcacctg tgtgaccaat ctgacatgct 450 gcatggaaca tggggaagag gatgtgattt atacctggaa ggccctgggg 500 caagcagcca atgagtccca taatgggtcc atcctcccca tctcctqgag 550 atggggagaa agtgatatga ccttcatctg cgttgccagg aaccctgtca 600 gcagaaactt ctcaagcccc atccttgcca ggaagctctg tgaaggtgct 650 gctgatgacc cagattecte catggteete etgtgtetee tgttggtgee 700 cctcctgctc agtctctttg tactggggct atttctttgg tttctgaaga 750 gagagagaca agaagagtac attgaagaga agaagagagt ggacatttgt 800 cgggaaactc ctaacatatg cccccattct ggagagaaca cagagtacga 850 cacaatccct cacactaata gaacaatcct aaaggaagat ccagcaaata 900 cggtttactc cactgtggaa ataccgaaaa agatggaaaa tccccactca 950 ctgctcacga tgccagacac accaaggcta tttgcctatg agaatgttat 1000 ctagacagca gtgcactccc ctaagtctct gctcaaaaaa aaaaaaaaa 1050

aaa 1053

<210> 255

<211> 860 <212> DNA

<213> Homo sapiens

<400> 255

gaaagacgtg gtcctgacag acagacaatc ctattcccta ccaaaatgaa 50

gatgctgctg ctgctgtgtt tgggactgac cctagtctgt gtccatgcag 100 aagaagetag ttetaeggga aggaaettta atgtaqaaaa gattaatggg 150 gaatggcata ctattatcct ggcctctgac aaaagagaaa agatagaaga 200 acatggcaac tttagacttt ttctggagca aatccatgtc ttggagaatt 250 ccttagttct taaagtccat actgtaagag atgaagagtg ctccgaatta 300 tctatggttg ctgacaaaac agaaaaggct ggtgaatatt ctgtgacgta 350 tgatggattc aatacattta ctatacctaa gacagactat gataactttc 400 ttatggctca cctcattaac gaaaaggatg gggaaacctt ccaqctgatg 450 gggctctatg gccgagaacc agatttgagt tcagacatca aggaaaggtt 500 tgcacaacta tgtgaggagc atggaatcct tagagaaaat atcattgacc 550 tatccaatgc caatcgctgc ctccaggccc gagaatgaag aatggcctga 600 gcctccagtg ttgagtggac acttctcacc aggactccac catcatccct 650 tectatecat acageatece cagtataaat tetgtgatet geattecate 700 ctgtctcact gagaagtcca attccagtct atcaacatgt tacctaggat 750 acctcatcaa gaatcaaaga cttctttaaa tttctctttq atacaccctt 800 gacaattttt catgaaatta ttcctcttcc tgttcaataa atgattaccc 850 ttgcacttaa 860

<210> 256

<211> 180

<212> PRT

<213> Homo sapiens

<400> 256

Met Lys Met Leu Leu Leu Cys Leu Gly Leu Thr Leu Val Cys 1 5 10 15

Val His Ala Glu Glu Ala Ser Ser Thr Gly Arg Asn Phe Asn Val

Glu Lys Ile Asn Gly Glu Trp His Thr Ile Ile Leu Ala Ser Asp 35 40 45

Lys Arg Glu Lys Ile Glu Glu His Gly Asn Phe Arg Leu Phe Leu 50 55 60

Glu Gln Ile His Val Leu Glu Asn Ser Leu Val Leu Lys Val His
65 70 75

Thr Val Arg Asp Glu Glu Cys Ser Glu Leu Ser Met Val Ala Asp 80 85 90

Lys Thr Glu Lys Ala Gly Glu Tyr Ser Val Thr Tyr Asp Gly Phe 95 100

Asn Thr Phe Thr Ile Pro Lys Thr Asp Tyr Asp Asn Phe Leu Met

```
Ala His Leu Ile Asn Glu Lys Asp Gly Glu Thr Phe Gln Leu Met $125$ $130$
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Gly Leu Tyr Gly Arg Glu Pro Asp Leu Ser Ser Asp Ile Lys Glu 140 145

Arg Phe Ala Gln Leu Cys Glu Glu His Gly Ile Leu Arg Glu Asn 155 160 165

Ile Ile Asp Leu Ser Asn Ala Asn Arg Cys Leu Gln Ala Arg Glu 170 175 180

<210> 257

<211> 766

<212> DNA

<213> Homo sapiens

<400> 257

ggctcgagcg tttctgagcc aggggtgacc atgacctgct gcgaaggatg 50 gacatcctgc aatggattca gcctgctggt tctactgctg ttaggagtag 100 ttctcaatgc gatacctcta attgtcagct tagttgagga agaccaattt 150 tctcaaaacc ccatctcttg ctttgagtgg tggttcccag gaattatagg 200 agcaggtctg atggccattc cagcaacaac aatgtccttg acagcaagaa 250 aaagagcgtg ctgcaacaac agaactggaa tgtttctttc atcatttttc 300 agtgtgatca cagtcattgg tgctctgtat tgcatgctga tatccatcca 350 ggctctctta aaaggtcctc tcatgtgtaa ttctccaagc aacagtaatg 400 ccaattgtga attiticattg aaaaacatca gtgacattca tccagaatcc 450 ttcaacttgc agtggttttt caatgactct tgtgcacctc ctactggttt 500 caataaaccc accagtaacg acaccatggc gagtggctgg agagcatcta 550 gtttccactt cgattctgaa gaaaacaaac ataggcttat ccacttctca 600 gtatttttag gtctattgct tgttggaatt ctggaggtcc tgtttgggct 650 cagtcagata gtcatcggtt tccttggctg tctgtgtgga gtctctaagc 700 gaagaagtca aattgtgtag tttaatggga ataaaatgta agtatcagta 750 gtttgaaaaa aaaaaa 766

<210> 258

<211> 229

<212> PRT

<213> Homo sapiens

<400> 258

Met Thr Cys Cys Glu Gly Trp Thr Ser Cys Asn Gly Phe Ser Leu  $1 \hspace{1cm} 5 \hspace{1cm} 10 \hspace{1cm} 15$ 

Leu Val Leu Leu Leu Gly Val Val Leu Asn Ala Ile Pro Leu 20 25 30

Ile Val Ser Leu Val Glu Glu Asp Gln Phe Ser Gln Asn Pro Ile

man.

35 40 45

Ser Cys Phe Glu Trp Trp Phe Pro Gly Ile Ile Gly Ala Gly Leu 50 55 60

Met Ala Ile Pro Ala Thr Thr Met Ser Leu Thr Ala Arg Lys Arg
65 70 75

Ala Cys Cys Asn Asn Arg Thr Gly Met Phe Leu Ser Ser Phe Phe 80 85 90

Ser Val Ile Thr Val Ile Gly Ala Leu Tyr Cys Met Leu Ile Ser 95 100 105

Ile Gln Ala Leu Leu Lys Gly Pro Leu Met Cys Asn Ser Pro Ser 110 115 120

Asn Ser Asn Ala Asn Cys Glu Phe Ser Leu Lys Asn Ile Ser Asp 125 130 135

Ile His Pro Glu Ser Phe Asn Leu Gln Trp Phe Phe Asn Asp Ser 140 145 150

Cys Ala Pro Pro Thr Gly Phe Asn Lys Pro Thr Ser Asn Asp Thr
155 160 165

Met Ala Ser Gly Trp Arg Ala Ser Ser Phe His Phe Asp Ser Glu 170 175 180

Glu Asn Lys His Arg Leu Ile His Phe Ser Val Phe Leu Gly Leu
185 190 195

Leu Leu Val Gly Ile Leu Glu Val Leu Phe Gly Leu Ser Gln Ile 200 205 210

Val Ile Gly Phe Leu Gly Cys Leu Cys Gly Val Ser Lys Arg Arg 215 220 220

Ser Gln Ile Val

<210> 259

<211> 434 <212> DNA

<213> Homo sapiens

<400> 259

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tcaacacgtt gctttaataa atcacttgcc ctgc 434

<210> 260

<211> 83

<212> PRT

<213> Homo sapiens

<400> 260

Met Arg Leu Ser Val Cys Leu Leu Met Val Ser Leu Ala Leu Cys 1 5 10 15

Cys Tyr Gln Ala His Ala Leu Val Cys Pro Ala Val Ala Ser Glu 20 25 30

Ile Thr Val Phe Leu Phe Leu Ser Asp Ala Ala Val Asn Leu Gln 35 40 45

Val Ala Lys Leu Asn Pro Pro Pro Glu Ala Leu Ala Ala Lys Leu
50 55 60

Glu Val Lys His Cys Thr Asp Gln Ile Ser Phe Lys Lys Arg Leu
65 70 75

Ser Leu Lys Lys Ser Trp Trp Lys

<210> 261

<211> 636

<212> DNA

<213> Homo sapiens

<400> 261

atcegitate tgegetgeea geteaggiga gecetegeea aggitgacete 50 geaggacact ggitgaaggag cagitgaggaa cetigeagagi cacacagitig 100 cigaceaati gagetgigag eetigageag atcegigge tgeagaceee 150 egeeceagig ceteteeee tgeageeetig eeeetegaac tgitgacatig 200 agagagigae eetigeeeti eteetaetigg eaggeetgae tgeetiggaa 250 geeaatgace eatitgeeaa taaagaegat eeetitetaet atgaetggaa 300 aaacetgeag etgageggae tgatetgegg agggeteetig geeatigetig 350 ggategegge agitetgagi ggeaaatgea aatacaagag eageeagaag 400 eageacagte etgaeeetga gaaggeeate eeaeteatea eteetaggete 450 tgeeactaet tgetgageae aggaetgee teeagggatig geetgaagee 500 taacaetgge eeeetageee teeteeeetg ggaggeetta teeteaagga 550 aggaettete teeaagggea ggetgitagg eeeetitetig atcaggage 600 ttetttatga attaaaeteg eeeeaeee eeetee 636

<sup>&</sup>lt;210> 262

<sup>&</sup>lt;211> 89

<sup>&</sup>lt;212> PRT

<sup>&</sup>lt;213> Homo sapiens

Lys Ala Ile Pro Leu Ile Thr Pro Gly Ser Ala Thr Thr Cys  $80 \hspace{1cm} 85$ 

<210> 263 <211> 1676 <212> DNA <213> Homo sapiens

<400> 263 ggagaagagg ttgtgtggga caagctgctc ccgacagaag gatgtcgctg 50 ctgagcctgc cctggctggg cctcagaccg gtggcaatgt ccccatggct 100 actcctqctq ctqqttqtqq qctcctqqct actcqcccqc atcctqqctt 150 ggacctatgc cttctataac aactgccgcc ggctccagtg tttcccacag 200 cccccaaaac ggaactggtt ttggggtcac ctgggcctga tcactcctac 250 agaggagggc ttgaaggact cgacccagat gtcggccacc tattcccagg 300 gctttacggt atggctgggt cccatcatcc ccttcatcgt tttatgccac 350 cctgacacca tccggtctat caccaatgcc tcagctgcca ttgcacccaa 400 ggataatctc ttcatcaggt tcctgaagcc ctggctggga gaagggatac 450 tgctgagtgg cggtgacaag tggagccgcc accqtcqqat gctgacqccc 500 gccttccatt tcaacatcct gaagtcctat ataacgatct tcaacaagag 550 tgcaaacatc atgcttgaca agtggcagca cctggcctca gagggcagca 600 gtcgtctgga catgtttgag cacatcagcc tcatgacctt ggacagtcta 650 cagaaatgca tcttcagctt tgacagccat tgtcaggaga gqcccagtga 700 atatattgcc accatcttgg agctcagtgc ccttgtagag aaaagaagcc 750 agcatatect ecageaeatg gaetttetgt attacetete ecatgaeggg 800 eggegettee acagggeetg eegeetggtg catgacttea cagacgetgt 850 catcogggag cggcgtcgca ccctccccac tcagggtatt gatgattttt 900 tcaaagacaa agccaagtcc aagactttgg atttcattga tgtgcttctg 950

ctgagcaagg atgaagatgg gaaggcattg tcagatgagg atataagagc 1000 agaggctgac accttcatgt ttggaggcca tgacaccacg gecagtggcc 1050 tetectgggt cctgtacaac cttgcgaggc acccagaata ccaggagcgc 1100 tgccgacagg aggtgcaaga gcttctgaag gaccgcgatc ctaaagagat 1150 tgaatgggac gacctggece agctgcctt cctgaccatg tgcgtgaagg 1200 agagcctgag gttacatccc ccagctcct tcatctcccg atgctgcacc 1250 caggacattg tteteccaga tggccgagtc atcccaaag gcattacctg 1300 cctcatcgat attatagggg tccatcaca cccaactgtg tggccggatc 1350 ctgaggtcta cgacccttc cgctttgacc cagagaacag caaggggagg 1400 tcacctctgg ctttattcc tttetccgca gggcccagga actgcatcgg 1450 gcaggcgttc gccatggcag agatgaaagt ggtcctggcg ttgatgctgc 1500 tgcacttccg gttcctgcca gaccacctg agccccgcag gaagctggaa 1550 ttgatcatgc gcgccgaggg cgggctttgg ctgcgggtgg agcccctgaa 1600 tgtaggcttg cagtgactt ctgaccatc cacctgttt tttgcagatt 1650 gtcatgaata aaacggtgct gtcaaa 1676

<210> 264 <211> 524

<212> PRT

<213> Homo sapiens

<400> 264

Met Ser Leu Ser Leu Pro Trp Leu Gly Leu Arg Pro Val Ala 1 5 10 15

Met Ser Pro Trp Leu Leu Leu Leu Val Val Gly Ser Trp Leu 20 25 30

Leu Ala Arg Ile Leu Ala Trp Thr Tyr Ala Phe Tyr Asn Asn Cys 35 40 45

Arg Arg Leu Gln Cys Phe Pro Gln Pro Pro Lys Arg Asn Trp Phe 50 55 60

Trp Gly His Leu Gly Leu Ile Thr Pro Thr Glu Glu Gly Leu Lys
65 70 75

Asp Ser Thr Gln Met Ser Ala Thr Tyr Ser Gln Gly Phe Thr Val 80 85 90

Trp Leu Gly Pro Ile Ile Pro Phe Ile Val Leu Cys His Pro Asp 95 100 105

Thr Ile Arg Ser Ile Thr Asn Ala Ser Ala Ala Ile Ala Pro Lys 110 115 120

Asp Asn Leu Phe Ile Arg Phe Leu Lys Pro Trp Leu Gly Glu Gly 125 130 135

Ile Leu Leu Ser Gly Gly Asp Lys Trp Ser Arg His Arg Arg Met Leu Thr Pro Ala Phe His Phe Asn Ile Leu Lys Ser Tyr Ile Thr 155 160 Ile Phe Asn Lys Ser Ala Asn Ile Met Leu Asp Lys Trp Gln His 170 175 Leu Ala Ser Glu Gly Ser Ser Arg Leu Asp Met Phe Glu His Ile Ser Leu Met Thr Leu Asp Ser Leu Gln Lys Cys Ile Phe Ser Phe Asp Ser His Cys Gln Glu Arg Pro Ser Glu Tyr Ile Ala Thr Ile 220 Leu Glu Leu Ser Ala Leu Val Glu Lys Arg Ser Gln His Ile Leu 230 235 Gln His Met Asp Phe Leu Tyr Tyr Leu Ser His Asp Gly Arg Arg 250 Phe His Arg Ala Cys Arg Leu Val His Asp Phe Thr Asp Ala Val Ile Arg Glu Arg Arg Arg Thr Leu Pro Thr Gln Gly Ile Asp Asp Phe Phe Lys Asp Lys Ala Lys Ser Lys Thr Leu Asp Phe Ile Asp 295 Val Leu Leu Ser Lys Asp Glu Asp Gly Lys Ala Leu Ser Asp 310 305 Glu Asp Ile Arg Ala Glu Ala Asp Thr Phe Met Phe Gly Gly His 320 325 Asp Thr Thr Ala Ser Gly Leu Ser Trp Val Leu Tyr Asn Leu Ala Arg His Pro Glu Tyr Gln Glu Arg Cys Arg Gln Glu Val Gln Glu 350 355 Leu Leu Lys Asp Arg Asp Pro Lys Glu Ile Glu Trp Asp Asp Leu 365 Ala Gln Leu Pro Phe Leu Thr Met Cys Val Lys Glu Ser Leu Arg 380 Leu His Pro Pro Ala Pro Phe Ile Ser Arg Cys Cys Thr Gln Asp Ile Val Leu Pro Asp Gly Arg Val Ile Pro Lys Gly Ile Thr Cys Leu Ile Asp Ile Ile Gly Val His His Asn Pro Thr Val Trp Pro 425 430 Asp Pro Glu Val Tyr Asp Pro Phe Arg Phe Asp Pro Glu Asn Ser 440 445

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Lys Gly Arg Ser Pro Leu Ala Phe Ile Pro Phe Ser Ala Gly Pro 455 460 465
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Arg Asn Cys Ile Gly Gln Ala Phe Ala Met Ala Glu Met Lys Val 470 475 480

Val Leu Ala Leu Met Leu Leu His Phe Arg Phe Leu Pro Asp His
485 490 495

Thr Glu Pro Arg Arg Lys Leu Glu Leu Ile Met Arg Ala Glu Gly 500 505 510

Gly Leu Trp Leu Arg Val Glu Pro Leu Asn Val Gly Leu Gln 515 520

<210> 265

<211> 584

<212> DNA

<213> Homo sapiens

<400> 265

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<210> 266

<211> 124

<212> PRT

<213> Homo sapiens

<400> 266

Met Tyr Lys Leu Ala Ser Cys Cys Leu Leu Phe Thr Gly Phe Leu 1 5 10 15

Asn Pro Leu Leu Ser Leu Pro Leu Leu Asp Ser Arg Glu Ile Ser 20 25 30

Phe Gln Leu Ser Ala Pro His Glu Asp Ala Arg Leu Thr Pro Glu 35 40 45

Glu Leu Glu Arg Ala Ser Leu Leu Gln Ile Leu Pro Glu Met Leu 50 55 60

Gly Ala Glu Arg Gly Asp Ile Leu Arg Lys Ala Asp Ser Ser Thr
65 70 75

Asn Ile Phe Asn Pro Arg Gly Asn Leu Arg Lys Phe Gln Asp Phe 80 85 90

Ser Gly Gln Asp Pro Asn Ile Leu Leu Ser His Leu Leu Ala Arg 95 100 105

Ile Trp Lys Pro Tyr Lys Lys Arg Glu Thr Pro Asp Cys Phe Trp 110 115 120

Lys Tyr Cys Val

<210> 267

<211> 654

<212> DNA

<213> Homo sapiens

<400> 267

cacctctggg atgggttgc tggtttaaaa caaacgccag tcatcctata 100
taaggacctg acagccacca ggcaccacct ccgccaggaa ctgcaggccc 150
acctgtctgc aacccagctg aggccatgcc ctccccaggg accgtctgca 200
gcctcctgct cctcggcatg ctctggctgg acttggccat ggcaggctcc 250
agcttcctga gccctgaaca ccagagagtc cagcaggaga aggatcgaa 300
gaagccacca gccaagctgc agccccgagc tctagcaggc tggctccgcc 350
cggaagatgg aggtcaagca gaaggggcag aggatgaact ggaagtccgg 400
ttcaacgccc cctttgatgt tggaatcaag ctgtcagggg ttcagtacca 450
gcagcacagc caggccctgg ggaagtttct tcaggacatc ctctgggaag 500
aggccaaaga ggccccagcc gacaagtgat cgcccacaag ccttactcac 550
ctctctctaa gtttagaagc gctcatctgg cttttcgctt gcttctgcag 600
caactcccac gactgttgta caagctcagg aggcgaataa atgttcaaac 650

<210> 268

tgta 654

<211> 117

<212> PRT

<213> Homo sapiens

<400> 268

Met Pro Ser Pro Gly Thr Val Cys Ser Leu Leu Leu Gly Met 1 5 10 15

Leu Trp Leu Asp Leu Ala Met Ala Gly Ser Ser Phe Leu Ser Pro 20 25 30

Glu His Gln Arg Val Gln Gln Arg Lys Glu Ser Lys Lys Pro Pro 35 40 45 Ala Lys Leu Gln Pro Arg Ala Leu Ala Gly Trp Leu Arg Pro Glu 60

Asp Gly Gly Gln Ala Glu Gly Ala Glu Asp Glu Leu Glu Val Arg 75

Phe Asn Ala Pro Phe 80 Asp Val Gly Ile Lys Leu Ser Gly Val Gln 90

Tyr Gln Gln His Ser Gln Ala Leu Gly Lys Phe Leu Gln Asp Ile 105

Leu Trp Glu Glu Ala Lys Glu Ala Pro Ala Asp Lys 110 115

<210> 269

<211> 1332

<212> DNA

<213> Homo sapiens

<400> 269

eggecacage tggeatgete tgeetgateg ceatectget gtatgteete 50 gtccagtacc tcgtgaaccc cggggtgctc cgcacggacc ccagatgtca 100 agaatatgaa cacgtggctg ctgttcctcc ccctgttccc ggtgcaggtg 150 cagaccetga tagtegtgat categggatg etegtgetee tgetggaett 200 tcttggcttg gtgcacctgg gccagctgct catcttccac atctacctga 250 gtatgtcccc caccctaagc ccccgatccc cccaaggctg ggtggtcaga 300 gctgctcatc ttacacctct acttgagtat gtccctaacc ctgagccccc 350 cacgcctggg gccagagtct ttgtcccccg tgtgcgcatg tgttcagggt 400 cagectetee cagaagtgag atcatggaca aaaagggcaa atcacaggaa 450 gaaattaaat ccatgaggac ccagcaggcc cagcaagaag ctgaactcac 500 gccgagacct gcaggagtgg tgccaggtgc ttgaagtaac aagtttaaaa 550 tgttcagaga caatggaatg gaatctatta qqcaaqaaca qqacattatq 600 aaataaggac aggtggactt ccaaaaacac aagtagaaat tctaacaatg 650 aaatatatta caggcaggte acccactaac caaacaactg aagcgagage 700 tgtggtcttg cttggtctca cagtgggcac agcggtaggc ggtcagtcat 750 gttgctgaac gacggagggt aaactcccca gccccaagaa aacctgtgtt 800 ggaagtaaca acaacctccc tgctcctggc accagccgtt ttggtcatgg 850 tgggccagct gcaaagcgtc ttccattctc tgggcagtgg tggccccgag 900 gctgtggcct ctcagggggt ttctgtggac acgggcagca gagtgtgtcc 950 aggccagccc ccaagaatgc cctgctcctg acagcttggc caacccctgg 1000 tcagggcaga gggagttggg tgggtcaggc tctqqqctca cctccatctc 1050

<210> 270

<211> 142

<212> PRT

<213> Homo sapiens

<400> 270

Met Asn Thr Trp Leu Leu Phe Leu Pro Leu Phe Pro Val Gln Val 1 5 10 15

Gln Thr Leu Ile Val Val Ile Ile Gly Met Leu Val Leu Leu 20 25 30

Asp Phe Leu Gly Leu Val His Leu Gly Gln Leu Leu Ile Phe His  $35 \hspace{1cm} 40 \hspace{1cm} 45$ 

Ile Tyr Leu Ser Met Ser Pro Thr Leu Ser Pro Arg Ser Pro Gln
50 55 60

Gly Trp Val Val Arg Ala Ala His Leu Thr Pro Leu Leu Glu Tyr 65 70 75

Val Pro Asn Pro Glu Pro Pro Thr Pro Gly Ala Arg Val Phe Val 80 85 90

Pro Arg Val Arg Met Cys Ser Gly Ser Ala Ser Pro Arg Ser Glu
95 100 105

Ile Met Asp Lys Lys Gly Lys Ser Gln Glu Glu Ile Lys Ser Met
110 115 120

Arg Thr Gln Gln Ala Gln Gln Glu Ala Glu Leu Thr Pro Arg Pro  $125 \\ 130 \\ 135$ 

Ala Gly Val Val Pro Gly Ala

<210> 271

<211> 1484

<212> DNA

<213> Homo sapiens

<400> 271

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<210> 272

<211> 285

<212> PRT

<213> Homo sapiens

<400> 272

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Leu Leu Ser Ala Ile Leu Ser Met Leu Ser Leu Ser Phe Ser Thr 20 25 30

Thr Ser Leu Leu Ser Asn Tyr Trp Phe Val Gly Thr Gln Lys Val

443

2 = 2

35 40 45

Pro Lys Pro Leu Cys Glu Lys Gly Leu Ala Ala Lys Cys Phe Asp Met Pro Val Ser Leu Asp Gly Asp Thr Asn Thr Ser Thr Gln Glu Val Val Gln Tyr Asn Trp Glu Thr Gly Asp Asp Arg Phe Ser Phe Arg Ser Phe Arg Ser Gly Met Trp Leu Ser Cys Glu Glu Thr Val 100 Glu Glu Pro Gly Glu Arg Cys Arg Ser Phe Ile Glu Leu Thr Pro 110 115 120 Pro Ala Lys Arg Gly Glu Lys Gly Leu Leu Glu Phe Ala Thr Leu Gln Gly Pro Cys His Pro Thr Leu Arg Phe Gly Gly Lys Arg Leu 140 145 150 Met Glu Lys Ala Ser Leu Pro Ser Pro Pro Leu Gly Leu Cys Gly Lys Asn Pro Met Val Ile Pro Gly Asn Ala Asp His Leu His Arg Thr Ser Ile His Gln Leu Pro Pro Ala Thr Asn Arg Leu Ala Thr 190 185 His Trp Glu Pro Cys Leu Trp Ala Gln Thr Glu Arg Leu Cys Cys Cys Phe Leu Cys Pro Val Arg Ser Pro Gly Asp Gly Gly Pro His 215 220 225 Asp Val Phe Thr Ser Leu Pro Ser Asp Cys Gln Leu Gly Ser Arg 235 Arg Leu Glu Thr Thr Cys Leu Glu Leu Trp Leu Gly Leu Leu His 250 Gly Leu Ala Leu Leu His Leu Leu His Gly Val Gly Cys His His Leu Gln His Val His Gln Asp Gly Ala Gly Val Gln Val Gln Ala

<210> 273

<211> 1158

<212> DNA

<213> Homo sapiens

<400> 273

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<210> 274 <211> 86 <212> PRT <213> Homo sapiens

<400> 274

Met Trp Leu Pro Leu Gly Leu Leu Ser Leu Cys Leu Ser Pro Leu 1 15

Pro Ile Leu Ser Ser Pro Ser Leu Lys Ser Gln Ala Cys Gln Gln  $20 \\ 25 \\ 30$ 

Leu Leu Trp Thr Leu Pro Ser Pro Leu Val Ala Phe Arg Ala Asn  $35 \hspace{1cm} 40 \hspace{1cm} 45$ 

Arg Thr Thr Tyr Val Met Asp Val Ser Thr Asn Gln Gly Ser Gly 50 55 60

Met Glu His Arg Asn His Leu Cys Phe Cys Asp Leu Tyr Asp Arg
65 70 75

Ala Thr Ser Pro Pro Leu Lys Cys Ser Leu Leu 80 85

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<211> 2694
<212> DNA
<213> Homo sapiens
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<210> 276
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Asn Lys Tyr Trp Pro Leu Phe Val Leu Phe Phe Tyr Ile Leu Ser

<sup>&</sup>lt;211> 131

<sup>&</sup>lt;212> PRT

<sup>&</sup>lt;213> Homo sapiens

<sup>&</sup>lt;400> 276

Met Ala Gly Ile Lys Ala Leu Ile Ser Leu Ser Phe Gly Gly Ala 1  $\phantom{0}$  5 10 15

Ile Gly Leu Met Phe Leu Met Leu Gly Cys Ala Leu Pro Ile Tyr
20 25 30

la i

35 40 45

Pro Ile Pro Tyr Cys Ile Ala Arg Arg Leu Val Asp Asp Thr Asp 50 55 60

Ala Met Ser Asn Ala Cys Lys Glu Leu Ala Ile Phe Leu Thr Thr
65 70 75

Ala His Leu Ile Glu Trp Gly Ala Cys Ala Leu Val Leu Thr Gly 95 100 105

Asn Thr Val Ile Phe Ala Thr Ile Leu Gly Phe Phe Leu Val Phe 110  $\phantom{-}$  115  $\phantom{-}$  120

Gly Ser Asn Asp Asp Phe Ser Trp Gln Gln Trp
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<210> 277

<211> 4104

<212> DNA

<213> Homo sapiens

<400> 277

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<210> 278 <211> 522 <212> PRT

<213> Homo sapiens

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260

Met Glu Pro His Val Phe Glu Thr Val Pro His Leu Gln Ser Leu

265

<213> Homo sapiens

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Gln Leu Asp Ser Asn Arg Leu Thr Tyr Ile Glu Pro Arg Ile Leu
 Asn Ser Trp Lys Ser Leu Thr Ser Ile Thr Leu Ala Gly Asn Leu
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                                     310
 Trp Asp Cys Gly Arg Asn Val Cys Ala Leu Ala Ser Trp Leu Ser
 Asn Phe Gln Gly Arg Tyr Asp Gly Asn Leu Gln Cys Ala Ser Pro
 Glu Tyr Ala Gln Gly Glu Asp Val Leu Asp Ala Val Tyr Ala Phe
                 350
                                     355
 His Leu Cys Glu Asp Gly Ala Glu Pro Thr Ser Gly His Leu Leu
 Ser Ala Val Thr Asn Arg Ser Asp Leu Gly Pro Pro Ala Ser Ser
                 380
                                     385
 Ala Thr Thr Leu Ala Asp Gly Gly Glu Gly Gln His Asp Gly Thr
                 395
 Phe Glu Pro Ala Thr Val Ala Leu Pro Gly Gly Glu His Ala Glu
 Asn Ala Val Gln Ile His Lys Val Val Thr Gly Thr Met Ala Leu
                 425
                                     430
 Ile Phe Ser Phe Leu Ile Val Val Leu Val Leu Tyr Val Ser Trp
 Lys Cys Phe Pro Ala Ser Leu Arg Gln Leu Arg Gln Cys Phe Val
                 455
 Thr Gln Arg Arg Lys Gln Lys Gln Thr Met His Gln Met
                 470
                                     475
 Ala Ala Met Ser Ala Gln Glu Tyr Tyr Val Asp Tyr Lys Pro Asn
 His Ile Glu Gly Ala Leu Val Ile Ile Asn Glu Tyr Gly Ser Cys
                 500
                                     505
 Thr Cys His Gln Gln Pro Ala Arg Glu Cys Glu Val
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<212> DNA
<213> Artificial Sequence
<220>
<223> Synthetic oligonucleotide probe
<400> 279
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<211> 709
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<210> 281

<211> 229

<212> PRT

<213> Homo sapiens

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Asp Val Ala Ala Asn Trp Ser Gln Asn Arg Thr Pro Cys Ala Gly 35 40 45

Gly Ala Val Glu Phe Pro Ala Asp Lys Met Val Ser Val Leu Val 50 55 60

Gln Glu Gly His Ala Val Ser Asp Met Leu Leu Pro Leu Asp Gly 65 70 75

Glu Leu Val Leu Ala Ser Gly Ala Gly Phe Gly Val Ser Asp Val 80 85 90

Gly Ser His Leu Asp Cys Gly Ala Gly Glu Pro Ala Val Phe Arg 95 100 105

Asp Ser Asp Arg Phe Ser Trp His Asp Pro His Leu Trp Arg Ser 110 115 120

Gly Asp Glu Ala Pro Gly Leu Phe Phe Val Asp Ala Glu Arg Val 125 130 135

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Pro Cys Arg His Asp Asp Val Phe Phe Pro Pro Ser Ala Ser Phe
                140
Arg Val Gly Leu Gly Pro Gly Ala Ser Pro Val Arg Val Arg Ser
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                                     160
                                                         165
Ile Ser Ala Leu Gly Arg Thr Phe Thr Arg Asp Glu Asp Leu Ala
Val Phe Leu Ala Ser Arg Ala Gly Arg Leu Arg Phe His Gly Pro
Gly Ala Leu Ser Val Gly Pro Glu Asp Cys Ala Asp Pro Ser Gly
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                                     205
                                                         210
Cys Val Cys Gly Asn Ala Glu Ala Gln Pro Trp Ile Cys Ala Ala
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Leu Leu Gln Pro

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<213> Homo sapiens

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Leu Ile Ala Thr Ile Met Val Leu Leu Cys Phe Ala Leu Thr Leu

# 44 mm

Mary Street

Ann A

4.1

1,13

H H

Cys Ser Ala Phe Trp Trp His Asn Lys Gly Leu Ala Leu Ile Phe 35 40 45

Cys Ile Leu Gln Ser Leu Ala Leu Thr Trp Tyr Ser Leu Ser Phe 50 55 60

Ile Pro Phe Ala Arg Asp Ala Val Lys Lys Cys Phe Ala Val Cys 65 70 75

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<211> 2623

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290 295 300 Val Pro Glu Arg Trp His Tyr Lys Tyr Asn Ser Arg Ile Gln Pro 305 310 Ile Ile Ala Val Ala Asp Glu Gly Trp His Ile Leu Gln Asn Lys 325 330 Ser Asp Asp Phe Leu Leu Gly Asn His Gly Tyr Asp Asn Ala Leu 335 340 Ala Asp Met His Pro Ile Phe Leu Ala His Gly Pro Ala Phe Arg 350 355 Lys Asn Phe Ser Lys Glu Ala Met Asn Ser Thr Asp Leu Tyr Pro 365 370 Leu Leu Cys His Leu Leu Asn Ile Thr Ala Met Pro His Asn Gly 380 385 Ser Phe Trp Asn Val Gln Asp Leu Leu Asn Ser Ala Met Pro Arg 395 400 405 Val Val Pro Tyr Thr Gln Ser Thr Ile Leu Leu Pro Gly Ser Val Lys Pro Ala Glu Tyr Asp Gln Glu Gly Ser Tyr Pro Tyr Phe Ile Gly Val Ser Leu Gly Ser Ile Ile Val Ile Val Phe Phe Val Ile 440 445 Phe Ile Lys His Leu Ile His Ser Gln Ile Pro Ala Leu Gln Asp 455 460 Met His Ala Glu Ile Ala Gln Pro Leu Leu Gln Ala 470

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<211> 1337

<212> DNA

<213> Homo sapiens

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tcacacagee aaaggaggea gagccagaae teacaaccag atccagagge 200
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cgaggaagge ceccettgae tteagggea tgttgaggaa actgttcage 500

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<211> 255

<212> PRT

<213> Homo sapiens

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Val Gly Asp Asp Tyr His Ala Trp Asn Ile Asn Tyr Lys Lys Trp 35 40

Glu Asn Glu Glu Glu Glu Glu Glu Glu Gln Pro Pro Thr
50 55 60

Pro Val Ser Gly Glu Glu Gly Arg Ala Ala Pro Asp Val Ala 65 70 75

Pro Ala Pro Gly Pro Ala Pro Arg Ala Pro Leu Asp Phe Arg Gly 80 85 90

Met Leu Arg Lys Leu Phe Ser Ser His Arg Phe Gln Val Ile Ile 95 100

Ile Cys Leu Val Val Leu Asp Ala Leu Leu Val Leu Ala Glu Leu
110 115 120

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Ile Leu Asp Leu Lys Ile Ile Gln Pro Asp Lys Asn Asn Tyr Ala
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Ala Met Val Phe His Tyr Met Ser Ile Thr Ile Leu Val Phe Phe
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Met Met Glu Ile Ile Phe Lys Leu Phe Val Phe Arg Leu Ser Ser
Phe Thr Thr Ser Leu Arg Ser Trp Met Pro Val Val Val Val
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Ser Phe Ile Leu Asp Ile Val Leu Leu Phe Gln Glu His Gln Phe
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Glu Ala Leu Gly Leu Leu Ile Leu Leu Arg Leu Trp Arg Val Ala
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Arg Ile Ile Asn Gly Ile Ile Ile Ser Val Lys Thr Arg Ser Glu
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Arg Gln Leu Leu Arg Leu Lys Gln Met Asn Val Gln Leu Ala Ala
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<400> 289

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Ser Thr Tyr Arg Gln Trp Lys Gln Lys Ile Val Gln Ala Gly Asp 50 55 60

Lys Asp Leu Asp Gly Gln Leu Asp Phe Glu Glu Phe Val His Tyr
65 70

Leu Gln Asp His Glu Lys Lys Leu Arg Leu Val Phe Lys Ile Leu  $80 \hspace{1cm} 85 \hspace{1cm} 90$ 

Asp Lys Lys Asn Asp Gly Arg Ile Asp Ala Gln Glu Ile Met Gln Ser Leu Arg Asp Leu Gly Val Lys Ile Ser Glu Gln Gln Ala Glu 115 110 Lys Ile Leu Lys Ser Met Asp Lys Asn Gly Thr Met Thr Ile Asp Trp Asn Glu Trp Arg Asp Tyr His Leu Leu His Pro Val Glu Asn Ile Pro Glu Ile Ile Leu Tyr Trp Lys His Ser Thr Ile Phe Asp 160 165 Val Gly Glu Asn Leu Thr Val Pro Asp Glu Phe Thr Val Glu Glu 175 Arg Gln Thr Gly Met Trp Trp Arg His Leu Val Ala Gly Gly 190 Ala Gly Ala Val Ser Arg Thr Cys Thr Ala Pro Leu Asp Arg Leu Lys Val Leu Met Gln Val His Ala Ser Arg Ser Asn Asn Met Gly Ile Val Gly Gly Phe Thr Gln Met Ile Arg Glu Gly Gly Ala Arg 230 235 240 Ser Leu Trp Arg Gly Asn Gly Ile Asn Val Leu Lys Ile Ala Pro 245 250 Glu Ser Ala Ile Lys Phe Met Ala Tyr Glu Gln Ile Lys Arg Leu Val Gly Ser Asp Gln Glu Thr Leu Arg Ile His Glu Arg Leu Val Ala Gly Ser Leu Ala Gly Ala Ile Ala Gln Ser Ser Ile Tyr Pro Met Glu Val Leu Lys Thr Arg Met Ala Leu Arg Lys Thr Gly Gln 305 310 315 Tyr Ser Gly Met Leu Asp Cys Ala Arg Arg Ile Leu Ala Arg Glu 320 325 Gly Val Ala Ala Phe Tyr Lys Gly Tyr Val Pro Asn Met Leu Gly 335 340 345 Ile Ile Pro Tyr Ala Gly Ile Asp Leu Ala Val Tyr Glu Thr Leu Lys Asn Ala Trp Leu Gln His Tyr Ala Val Asn Ser Ala Asp Pro 370 Gly Val Phe Val Leu Leu Ala Cys Gly Thr Met Ser Ser Thr Cys 380 385 390 Gly Gln Leu Ala Ser Tyr Pro Leu Ala Leu Val Arg Thr Arg Met 400

Gln Ala Gln Ala Ser Ile Glu Gly Ala Pro Glu Val Thr Met Ser Ser Leu Phe Lys His Ile Leu Arg Thr Glu Gly Ala Phe Gly Leu 425 430 435 Tyr Arg Gly Leu Ala Pro Asn Phe Met Lys Val Ile Pro Ala Val Ser Ile Ser Tyr Val Val Tyr Glu Asn Leu Lys Ile Thr Leu Gly 460

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<213> Homo sapiens

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Ile Ser Gly Arg His Ser Ile Thr Val Thr Thr Val Ala Ser Ala 35 40 45

Gly Asn Ile Gly Glu Asp Gly Ile Leu Ser Cys Thr Phe Glu Pro 50 55 60

Asp Ile Lys Leu Ser Asp Ile Val Ile Gln Trp Leu Lys Glu Gly 65 70 75

Val Leu Gly Leu Val His Glu Phe Lys Glu Gly Lys Asp Glu Leu 80 85 90

Ser Glu Gln Asp Glu Met Phe Arg Gly Arg Thr Ala Val Phe Ala  $95 \hspace{1.5cm} 100 \hspace{1.5cm} 105$ 

Asp Gln Val Ile Val Gly Asn Ala Ser Leu Arg Leu Lys Asn Val 110 115 120

Gln Leu Thr Asp Ala Gly Thr Tyr Lys Cys Tyr Ile Ile Thr Ser 125 130 135

Lys Gly Lys Gly Asn Ala Asn Leu Glu Tyr Lys Thr Gly Ala Phe 140 145

Ser Met Pro Glu Val Asn Val Asp Tyr Asn Ala Ser Ser Glu Thr

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Trp	Ala	Ser	Gln	Val 185	Asp	Gln	Gly	Ala	Asn 190	Phe	Ser	Glu	Val	Ser 195	
Asn	Thr	Ser	Phe	Glu 200	Leu	Asn	Ser	Glu	Asn 205	Val	Thr	Met	Lys	Val 210	
Val	Ser	Val	Leu	Tyr 215	Asn	Val	Thr	Ile	Asn 220	Asn	Thr	Tyr	Ser	Cys 225	
Met	Ile	Glu	Asn	Asp 230	Ile	Ala	Lys	Ala	Thr 235	Gly	Asp	Ile	Lys	Val 240	
Thr	Glu	Ser	Glu	Ile 245	Lys	Arg	Arg	Ser	His 250	Leu	Gln	Leu	Leu	Asn 255	
Ser	Lys	Ala	Ser	Leu 260	Суз	Val	Ser	Ser	Phe 265	Phe	Ala	Ile	Ser	Trp 270	
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<400> 292

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<210> 293 <211> 180

<212> PRT

<213> Homo sapiens

<400> 293

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Ala Leu Trp Gly Gly Thr Gln Pro Leu Leu Lys Arg Ala Ser Ala 20 25 30

Gly Leu Gln Arg Val His Glu Pro Thr Trp Ala Gln Gln Leu Leu
35 40

Gln Glu Met Lys Thr Leu Phe Leu Asn Thr Glu Tyr Leu Met Pro 50 55 60

Phe Leu Leu Asn Gln Cys Gly Ser Leu Leu Tyr Tyr Leu Thr Leu 65 70 75

Ala Ser Thr Asp Leu Thr Leu Ala Val Pro Ile Cys Asn Ser Leu 80 85 90

Ala Ile Ile Phe Thr Leu Ile Val Gly Lys Ala Leu Gly Glu Asp 95 100 105

Ile Gly Gly Lys Arg Lys Leu Asp Tyr Cys Glu Cys Gly Thr Gln 110 115 120

Leu Cys Gly Ser Arg His Thr Cys Val Ser Ser Phe Pro Glu Pro 125 130 135

Ile Ser Pro Glu Trp Val Arg Thr Arg Pro Phe Pro Ile Leu Pro 140 145 150

Phe Pro Leu Gln Leu Phe Cys Phe Leu Val Ala Ile Arg Val Pro 155 160 165

Phe Pro Trp Thr Val Trp Arg Lys Thr Glu Ala Gly Val Trp Asp 170 175 180

<210> 294

<211> 1164

<212> DNA

<213> Homo sapiens

<400> 294

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<sup>&</sup>lt;210> 295

<sup>&</sup>lt;211> 237

<sup>&</sup>lt;212> PRT

<213> Homo sapiens

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<400> 295
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Ser Cys Val Asn Ser Ile Ala Ser Glu Cys Pro Ser His Ala Asn
Thr Ser Cys Ile Ser Ser Ser Ala Ser Ser Ser Leu Glu Thr Pro
                  50
                                      55
Val Arg Leu Tyr Gln Asn Met Phe Cys Ser Ala Glu Asn Cys Ser
Glu Glu Thr His Ile Thr Ala Phe Thr Val His Val Ser Ala Glu
                                      85
Glu His Phe His Phe Val Ser Gln Cys Cys Gln Gly Lys Glu Cys
                  95
Ser Asn Thr Ser Asp Ala Leu Asp Pro Pro Leu Lys Asn Val Ser
Ser Asn Ala Glu Cys Pro Ala Cys Tyr Glu Ser Asn Gly Thr Ser
Cys Arg Gly Lys Pro Trp Lys Cys Tyr Glu Glu Glu Gln Cys Val
                                     145
Phe Leu Val Ala Glu Leu Lys Asn Asp Ile Glu Ser Lys Ser Leu
                 155
                                     160
Val Leu Lys Gly Cys Ser Asn Val Ser Asn Ala Thr Cys Gln Phe
                 170
                                     175
Leu Ser Gly Glu Asn Lys Thr Leu Gly Gly Val Ile Phe Arg Lys
Phe Glu Cys Ala Asn Val Asn Ser Leu Thr Pro Thr Ser Ala Pro
                 200
                                     205
Thr Thr Ser His Asn Val Gly Ser Lys Ala Ser Leu Tyr Leu Leu
Ala Leu Ala Ser Leu Leu Leu Arg Gly Leu Leu Pro
                 230
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<210> 296

<211> 1245

<212> DNA

<213> Homo sapiens

<400> 296

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aatctgggtc cccgggcggc gggggcccaa ggcctgaccc agactccgac 200
cgaaatgcag cgggtcagtt tacgctttgg gggccccatg acccgcagct 250
accggagcac cgcccggact ggtcttcccc ggaagacaag gataatccta 300
gaggacgaga atgatgccat ggccgacgcc gaccgcctgg ctggaccagc 350
ggctgccgag ctcttggccg ccacggtgtc caccggcttt agccggtcgt 400
ccgccattaa cgaggaggat gggtcttcag aagagggggt tgtgattaat 450
gccggaaagg atagcaccag cagagagctt cccagtgcga ctcccaatac 500
agcggggagt tccagcacga ggtttatagc caatagtcag gagcctgaaa 550
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ctgccagget egcaggecae eetgagecag tggtecaeae etgggtetae 650
cccgagccgg tggccgtcac cctcacccac agccatgcca tctcctgagg 700
atctgcggct ggtgctgatg ccctggggcc cgtggcactg ccactgcaag 750
tegggeacea tgageeggag eeggtetggg aagetgeacg geettteegg 800
gcgccttcga gttggggcgc tgagccagct ccgcacggag cacaagcctt 850
gcacctatca acaatgtccc tgcaaccgac ttcgggaaga gtgccccctg 900
gacacaagtc totgtactga caccaactgt gcctctcaga gcaccaccag 950
taccaggace accactacce cettececae catecacete agaageagte 1000
ccagcctgcc acccgccagc ccctgcccag ccctggcttt ttggaaacgg 1050
gtcaggattg gcctggagga tatttggaat agcctctctt cagtgttcac 1100
agagatgcaa ccaatagaca gaaaccagag gtaatggcca cttcatccac 1150
atgaggagat gtcagtatct caacctctct tgccctttca atcctagcac 1200
ccactagata tttttagtac agaaaaacaa aactggaaaa cacaa 1245
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<210> 297
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<sup>&</sup>lt;211> 341

<sup>&</sup>lt;212> PRT

<sup>&</sup>lt;213> Homo sapiens

<sup>&</sup>lt;400> 297

Met Val Pro Ala Ala Gly Ala Leu Leu Trp Val Leu Leu Leu Asn 1 5 10 15

Leu Gly Pro Arg Ala Ala Gly Ala Gln Gly Leu Thr Gln Thr Pro
20 25 30

Thr Glu Met Gln Arg Val Ser Leu Arg Phe Gly Gly Pro Met Thr 35 40 45

Arg Ser Tyr Arg Ser Thr Ala Arg Thr Gly Leu Pro Arg Lys Thr
50 55 60

Arg Ile Ile Leu Glu Asp Glu Asn Asp Ala Met Ala Asp Ala Asp

in:

65 70 75

Arg Leu Ala Gly Pro Ala Ala Ala Glu Leu Leu Ala Ala Thr Val Ser Thr Gly Phe Ser Arg Ser Ser Ala Ile Asn Glu Glu Asp Gly Ser Ser Glu Glu Gly Val Val Ile Asn Ala Gly Lys Asp Ser Thr 110 115 Ser Arg Glu Leu Pro Ser Ala Thr Pro Asn Thr Ala Gly Ser Ser 125 130 Ser Thr Arg Phe Ile Ala Asn Ser Gln Glu Pro Glu Ile Arg Leu Thr Ser Ser Leu Pro Arg Ser Pro Gly Arg Ser Thr Glu Asp Leu 155 Pro Gly Ser Gln Ala Thr Leu Ser Gln Trp Ser Thr Pro Gly Ser 175 Thr Pro Ser Arg Trp Pro Ser Pro Ser Pro Thr Ala Met Pro Ser 185 Pro Glu Asp Leu Arg Leu Val Leu Met Pro Trp Gly Pro Trp His 200 Cys His Cys Lys Ser Gly Thr Met Ser Arg Ser Arg Ser Gly Lys 215 220 Leu His Gly Leu Ser Gly Arg Leu Arg Val Gly Ala Leu Ser Gln 235 Leu Arg Thr Glu His Lys Pro Cys Thr Tyr Gln Gln Cys Pro Cys 245 250 Asn Arg Leu Arg Glu Glu Cys Pro Leu Asp Thr Ser Leu Cys Thr Asp Thr Asn Cys Ala Ser Gln Ser Thr Thr Ser Thr Arg Thr Thr 280 Thr Thr Pro Phe Pro Thr Ile His Leu Arg Ser Ser Pro Ser Leu 290 295 Pro Pro Ala Ser Pro Cys Pro Ala Leu Ala Phe Trp Lys Arg Val 310 Arg Ile Gly Leu Glu Asp Ile Trp Asn Ser Leu Ser Ser Val Phe 320 325

Thr Glu Met Gln Pro Ile Asp Arg Asn Gln Arg 335 340

<210> 298

<211> 2692

<212> DNA

<213> Homo sapiens

<400> 298

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cggttggtcc tgctagctgg ggcagcggcg ctggcgagcg gctcccaggg 100 cgaccgtgag ccggtgtacc gcgactgcgt actgcagtgc gaagagcaga 150 actgctctgg gggcgctctg aatcacttcc gctcccgcca gccaatctac 200 atgagtctag caggctggac ctgtcgggac gactgtaagt atgagtgtat 250 gtgggtcacc gttgggctct acctccagga aggtcacaaa gtgcctcagt 300 tocatggcaa gtggcccttc toccggttoc tgttctttca agagccggca 350 toggoogtgg cotogtttot caatggootg gocagootgg tgatgototg 400 ecgetacege acettegtge eageetecte ecceatgtac caeacetgtg 450 tggccttcgc ctgggtgtcc ctcaatgcat ggttctggtc cacagtcttc 500 cacaccaggg acactgacct cacagagaaa atggactact tetgtgeete 550 cactgtcatc ctacactcaa tctacctgtg ctgcgtcagg accgtggggc 600 tgcagcaccc agctgtggtc agtgccttcc gggctctcct gctgctcatg 650 ctgaccgtgc acgtctccta cctgagcctc atccgcttcg actatggcta 700 caacctggtg gccaacgtgg ctattggcct ggtcaacgtg gtgtggtggc 750 tggcctggtg cctgtggaac cagcggcggc tgcctcacgt gcgcaagtgc 800 gtggtggtgg tcttgctgct gcaggggctg tccctgctcg agctgcttga 850 cttcccaccg ctcttctggg tcctggatgc ccatgccatc tggcacatca 900 gcaccatccc tgtccacgtc ctcttttca gctttctgga agatgacagc 950 ctgtacctgc tgaaggaatc agaggacaag ttcaagctgg actgaagacc 1000 ttggagegag tetgeeccag tggggatect geeccegeec tgetggeete 1050 ccttctcccc tcaacccttg agatgatttt ctcttttcaa cttcttgaac 1100 ttggacatga aggatgtggg cccagaatca tgtggccagc ccaccccctg 1150 ttggccctca ccagccttgg agtctgttct agggaaggcc tcccagcatc 1200 tgggactcga gagtgggcag cccctctacc tcctggagct gaactggggt 1250 ggaactgagt gtgttcttag ctctaccggg aggacagctg cctgtttcct 1300 ccccaccage etecteccca catecccage tgeetggetg ggteetgaag 1350 ccctctgtct acctgggaga ccagggacca caggccttag ggatacaggg 1400 ggtccccttc tgttaccacc ccccaccctc ctccaggaca ccactaggtg 1450 gtgctggatg cttgttcttt ggccagccaa ggttcacggc gattctcccc 1500 atgggatctt gagggaccaa gctgctggga ttgggaagga gtttcaccct 1550 gaccgttgcc ctagccaggt tcccaggagg cctcaccata ctccctttca 1600 gggccagggc tccagcaagc ccagggcaag gatcctgtqc tqctqtctqq 1650

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<210> 299

<211> 320

<212> PRT

<213> Homo sapiens

<400> 299

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Ala Leu Ala Ser Gly Ser Gln Gly Asp Arg Glu Pro Val Tyr Arg 20 25 30

Asp Cys Val Leu Gln Cys Glu Glu Gln Asn Cys Ser Gly Gly Ala 35 40 45

Leu Asn His Phe Arg Ser Arg Gln Pro Ile Tyr Met Ser Leu Ala 50 55 60

Gly Trp Thr Cys Arg Asp Asp Cys Lys Tyr Glu Cys Met Trp Val 65 70

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Thr Val Gly Leu Tyr Leu Gln Glu Gly His Lys Val Pro Gln Phe
His Gly Lys Trp Pro Phe Ser Arg Phe Leu Phe Phe Gln Glu Pro
                                    100
Ala Ser Ala Val Ala Ser Phe Leu Asn Gly Leu Ala Ser Leu Val
Met Leu Cys Arg Tyr Arg Thr Phe Val Pro Ala Ser Ser Pro Met
                                    130
Tyr His Thr Cys Val Ala Phe Ala Trp Val Ser Leu Asn Ala Trp
                140
                                    145
                                                         150
Phe Trp Ser Thr Val Phe His Thr Arg Asp Thr Asp Leu Thr Glu
Lys Met Asp Tyr Phe Cys Ala Ser Thr Val Ile Leu His Ser Ile
                                    175
                                                         180
Tyr Leu Cys Cys Val Arg Thr Val Gly Leu Gln His Pro Ala Val
                185
                                    190
Val Ser Ala Phe Arg Ala Leu Leu Leu Met Leu Thr Val His
                200
                                    205
Val Ser Tyr Leu Ser Leu Ile Arg Phe Asp Tyr Gly Tyr Asn Leu
                215
                                    220
Val Ala Asn Val Ala Ile Gly Leu Val Asn Val Val Trp Trp Leu
                230
                                    235
Ala Trp Cys Leu Trp Asn Gln Arg Arg Leu Pro His Val Arg Lys
                245
                                    250
                                                         255
Cys Val Val Val Leu Leu Gln Gly Leu Ser Leu Leu Glu
                                    265
                                                        270
Leu Leu Asp Phe Pro Pro Leu Phe Trp Val Leu Asp Ala His Ala
                275
                                    280
Ile Trp His Ile Ser Thr Ile Pro Val His Val Leu Phe Phe Ser
                290
                                    295
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Phe Leu Glu Asp Asp Ser Leu Tyr Leu Leu Lys Glu Ser Glu Asp
                305
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Lys Phe Lys Leu Asp 320

<210> 300

<211> 1674

<212> DNA

<213> Homo sapiens

<400> 300

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cctcagtcat cagaacctga aggagtttgc cctgaccaac ccagagaaga 200 gcagcaccaa agaaacggag agaaaagaaa ccaaagccga ggaggagctg 250 gatgccgaag tcctggaggt gttccacccg acgcatgagt ggcaggccct 300 tcagccaggg caggctgtcc ctgcaggatc ccacgtacgg ctgaatcttc 350 agactgggga aagagaggca aaactccaat atgaggacaa gttccgaaat 400 aatttgaaag gcaaaaggct ggatatcaac accaacacct acacatctca 450 ggatctcaag agtgcactgg caaaattcaa ggagggggca gagatggaga 500 gttcaaagga agacaaggca aggcaggctg aggtaaaggg gctcttccgc 550 cccattgagg aactgaagaa agactttgat gagctgaatg ttgtcattga 600 gactgacatg cagatcatgg tacggctgat caacaagttc aatagttcca 650 gctccagttt ggaagagaag attgctgcgc tctttgatct tgaatattat 700 gtccatcaga tggacaatgc gcaggacctg ctttcctttg gtggtcttca 750 agtggtgatc aatgggctga acagcacaga gcccctcgtg aaggagtatg 800 ctgcgtttgt gctgggcgct gccttttcca gcaaccccaa ggtccaggtg 850 gaggccatcg aagggggagc cctgcagaag ctgctggtca tcctggccac 900 ggagcagccg ctcactgcaa agaagaaggt cctgtttgca ctgtgctccc 950 tgctgcgcca cttcccctat gcccagcggc agttcctgaa gctcgggggg 1000 ctgcaggtcc tgaggaccct ggtgcaggag aagggcacgg aggtgctcgc 1050 cgtgcgcgtg gtcacactgc tctacgacct ggtcacggag aagatgttcg 1100 ccgaggagga ggctgagctg acccaggaga tgtccccaga gaagctgcag 1150 cagtatcgcc aggtacacct cctgccaggc ctgtgggaac agggctggtg 1200 cgagatcacg gcccacctcc tggcgctgcc cgagcatgat gcccgtgaga 1250 aggtgctgca gacactgggc gtcctcctga ccacctgccg ggaccgctac 1300 egteaggace eccagetegg caggacactg gecageetge aggetgagta 1350 ccaggtgctg gccagcctgg agctgcagga tggtgaggac gagggctact 1400 tccaggagct gctgggctct gtcaacagct tgctgaagga gctgagatga 1450 ggccccacac caggactgga ctgggatgcc gctagtgagg ctgaggggtg 1500 ccagcgtggg tgggcttctc aggcaggagg acatcttggc agtgctggct 1550 aaaaaaaaaaaaaaaaaaaa 1674

<210> 301

<211> 461 <212> PRT <213> Homo sapiens

<400> 301 Met Ala Pro Gln Ser Leu Pro Ser Ser Arg Met Ala Pro Leu Gly Met Leu Leu Gly Leu Leu Met Ala Ala Cys Phe Thr Phe Cys Leu Ser His Gln Asn Leu Lys Glu Phe Ala Leu Thr Asn Pro Glu Lys Ser Ser Thr Lys Glu Thr Glu Arg Lys Glu Thr Lys Ala Glu Glu Glu Leu Asp Ala Glu Val Leu Glu Val Phe His Pro Thr His Glu Trp Gln Ala Leu Gln Pro Gly Gln Ala Val Pro Ala Gly Ser His Val Arg Leu Asn Leu Gln Thr Gly Glu Arg Glu Ala Lys Leu Gln Tyr Glu Asp Lys Phe Arg Asn Asn Leu Lys Gly Lys Arg Leu Asp Ile Asn Thr Asn Thr Tyr Thr Ser Gln Asp Leu Lys Ser Ala Leu 125 130 Ala Lys Phe Lys Glu Gly Ala Glu Met Glu Ser Ser Lys Glu Asp 140 Lys Ala Arg Gln Ala Glu Val Lys Arg Leu Phe Arg Pro Ile Glu 155 160 Glu Leu Lys Lys Asp Phe Asp Glu Leu Asn Val Val Ile Glu Thr 175 Asp Met Gln Ile Met Val Arg Leu Ile Asn Lys Phe Asn Ser Ser Ser Ser Ser Leu Glu Glu Lys Ile Ala Ala Leu Phe Asp Leu Glu 200 205 210 Tyr Tyr Val His Gln Met Asp Asn Ala Gln Asp Leu Leu Ser Phe 215 220 Gly Gly Leu Gln Val Val Ile Asn Gly Leu Asn Ser Thr Glu Pro 230 235 Leu Val Lys Glu Tyr Ala Ala Phe Val Leu Gly Ala Ala Phe Ser Ser Asn Pro Lys Val Gln Val Glu Ala Ile Glu Gly Gly Ala Leu Gin Lys Leu Val Ile Leu Ala Thr Glu Gln Pro Leu Thr Ala 280

Lys Lys Val Leu Phe Ala Leu Cys Ser Leu Leu Arg His Phe

290 295 300 Pro Tyr Ala Gln Arg Gln Phe Leu Lys Leu Gly Gly Leu Gln Val Leu Arg Thr Leu Val Gln Glu Lys Gly Thr Glu Val Leu Ala Val Arg Val Val Thr Leu Leu Tyr Asp Leu Val Thr Glu Lys Met Phe 340 Ala Glu Glu Ala Glu Leu Thr Gln Glu Met Ser Pro Glu Lys 350 355 Leu Gln Gln Tyr Arg Gln Val His Leu Leu Pro Gly Leu Trp Glu 370 Gln Gly Trp Cys Glu Ile Thr Ala His Leu Leu Ala Leu Pro Glu 385 His Asp Ala Arg Glu Lys Val Leu Gln Thr Leu Gly Val Leu Leu 395 400 405 Thr Thr Cys Arg Asp Arg Tyr Arg Gln Asp Pro Gln Leu Gly Arg 410 415 Thr Leu Ala Ser Leu Gln Ala Glu Tyr Gln Val Leu Ala Ser Leu 425 430 Glu Leu Gln Asp Gly Glu Asp Glu Gly Tyr Phe Gln Glu Leu Leu 445 450 Gly Ser Val Asn Ser Leu Leu Lys Glu Leu Arg 455

<210> 302 <211> 2136

<212> DNA

<213> Homo sapiens

<400> 302

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tegtggggte gegttgeeae eeeaegegga eteeeeaget ggegegeeee 150
teeeatttge etgteetggt eaggeeeeea eeeeettee eacetgaeea 200
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ggeettegeg ettteetga teaetgtgge tggggaeeeg ettegegta 300
teateetggt egeagggea ttttettgge tggteteeet geteetggee 350
tetgtggtet ggtteatett ggteeatgtg acegaeeggt eagatgeeeg 400
geteeagtae ggeeteetga tttttggtge tgetgtetet gteettetae 450
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Asp Arg Ser Asp Ala Arg Leu Gln Tyr Gly Leu Leu Ile Phe Gly
 Ala Ala Val Ser Val Leu Leu Gln Glu Val Phe Arg Phe Ala Tyr
 Tyr Lys Leu Leu Lys Lys Ala Asp Glu Gly Leu Ala Ser Leu Ser
 Glu Asp Gly Arg Ser Pro Ile Ser Ile Arg Gln Met Ala Tyr Val
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 Ser Gly Leu Ser Phe Gly Ile Ile Ser Gly Val Phe Ser Val Ile
 Asn Ile Leu Ala Asp Ala Leu Gly Pro Gly Val Val Gly Ile His
 Gly Asp Ser Pro Tyr Tyr Phe Leu Thr Ser Ala Phe Leu Thr Ala
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 Ala Ile Ile Leu Leu His Thr Phe Trp Gly Val Val Phe Phe Asp
                                     175
 Ala Cys Glu Arg Arg Tyr Trp Ala Leu Gly Leu Val Val Gly
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 Ser His Leu Leu Thr Ser Gly Leu Thr Phe Leu Asn Pro Trp Tyr
Glu Ala Ser Leu Leu Pro Ile Tyr Ala Val Thr Val Ser Met Gly
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Gly Thr Ala Pro Pro Pro Val Val Ser Thr Gly Ala Ala Ser Ala 65 70 75

Asn Ser Ala Leu Val Thr Val Glu Arg Ala Asp Ser Ser His Leu 80 85 90

Ser Ile Leu Ile Asp Pro Arg Cys Pro Asp Leu Thr Asp Ser Phe 95  $\phantom{0}100$   $\phantom{0}105$ 

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<sup>&</sup>lt;210> 319

<sup>&</sup>lt;211> 280

<sup>&</sup>lt;212> PRT

<sup>&</sup>lt;213> Homo sapiens

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<211> 468

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<213> Homo sapiens

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 cttttgccac aattcggcat ccagagcccc ggcgcacaga gcacagggnt 150
 cctttttcaa cgtggcgacc agtggccctg accctgctga ctttgtgctt 200
 ggtgctgctg atagggctgg cagccctqgg qcttttgttt tttcagtact 250
 accagetete caatactggt caagacacca ttteteaaat ggaagaaaga 300
 ttaggaaata cgtcccaaga gttgcaattt nttcaagtcc agaatataaa 350
 gcttgcagga agtntgcagc atgtggctga aaaactctgt cgtgagctgt 400
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 atacacaca cacttccc 468
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<223> Synthetic oligonucleotide probe
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<211> 2988
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 cccggtcccg cccctcgga gactcctctg gctgctctgg gggttcgccg 200
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 caccetgeae ageeeggeea ggeegeeaaa aaggeegtea ggaeeegeta 550
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 accetgtgcg tgaccetgtg cacatgtace agetgcacaa agetttegee 1250
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gatccagaat accagccatc tggccgttga tggggaccgg gcagctgctt 1350 ggcccgtggg tattccagca ccatcccgcc cggcctcccg ctttgaggtg 1400 ctgcgctggg actacttcac ggagcagcac gctttctcct gcgccgatgg 1450 ctcaccccgc tgcccactgc gtggggctga ccgggctgat gtggccgatg 1500 ttctggggac agctctagag gagctgaacc gccgctacca cccggccttg 1550 cggctccaga agcagcagct ggtgaatggc taccgacgct ttgatccggc 1600 ccggggtatg gaatacacgc tggacttgca gctggaggca ctgaccccc 1650 agggaggccg ccggccctc actcgccgag tgcagctgct ccggccgctg 1700 agecgegtgg agatettgee tgtgeeetat gteaetgagg ceteaegtet 1750 cactgtgctg ctgcctctag ctgcggctga gcgtgacctg gcccctggct 1800 tcttggaggc ctttgccact gcagcactgg agcctggtga tgctgcggca 1850 geoetgaeee tgetgetaet gtatgageeg egeeaggeee agegegtgge 1900 ccatgcagat gtcttcgcac ctgtcaaggc ccacgtggca gagctggagc 1950 ggcgtttccc cggtgcccgg gtgccatggc tcagtgtgca gacagccgca 2000 ccctcaccac tgcgcctcat ggatctactc tccaagaagc acccgctgga 2050 cacactgttc ctgctggccg ggccagacac ggtgctcacg cctgacttcc 2100 tgaaccgctg ccgcatgcat gccatctccg gctggcaggc cttctttccc 2150 atgeatttee aageetteea eecaggtgtg geeceaceae aagggeetgg 2200 gcccccagag ctgggccgtg acactggccg ctttgatcgc caggcagcca 2250 gcgaggcctg cttctacaac tccgactacg tggcagcccg tgggcgcctg 2300 gcggcagcct cagaacaaga agaggagctg ctggagagcc tggatgtgta 2350 cgagctgttc ctccacttct ccagtctgca tgtgctgcgg gcggtggagc 2400 cggcgctgct gcagcgctac cgggcccaga cgtgcagcgc gaggctcagt 2450 gaggacctgt accaccgctg cctccagagc gtgcttgagg gcctcggctc 2500 ccgaacccag ctggccatgc tactctttga acaggagcag ggcaacagca 2550 cetgacecca ecetgteece gtgggeegtg geatggeeae acceeaece 2600 acttetecce caaaaccaga gecacetgee agestegetg ggcagggetg 2650 gccgtagcca gaccccaagc tggcccactg gtcccctctc tggctctgtg 2700 ggtccctggg ctctggacaa gcactggggg acgtgccccc agagccaccc 2750 acttctcatc ccaaacccag tttccctgcc ccctgacgct gctgattcgg 2800 gctgtggcct ccacgtattt atgcagtaca gtctgcctga cgccagccct 2850 gcctctgggc cctgggggct gggctgtaga agagttgttg gggaaggagg 2900

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<210> 326

<211> 775

<212> PRT

<213> Homo sapiens

<400> 326

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Val Thr Trp Val Glu Glu Pro Cys Gly Pro Gly Pro Pro Gln Pro 35 40 45

Gly Asp Ser Glu Leu Pro Pro Arg Gly Asn Thr Asn Ala Arg 50 55 60

Arg Pro Asn Ser Val Gln Pro Gly Ala Glu Arg Glu Lys Pro Gly
65 70 75

Ala Gly Glu Gly Ala Gly Glu Asn Trp Glu Pro Arg Val Leu Pro 80 85 90

Tyr His Pro Ala Gln Pro Gly Gln Ala Ala Lys Lys Ala Val Arg 95 100 105

Thr Arg Tyr Ile Ser Thr Glu Leu Gly Ile Arg Gln Arg Leu Leu 110 115 120

Val Ala Val Leu Thr Ser Gln Thr Thr Leu Pro Thr Leu Gly Val 125 130

Ala Val Asn Arg Thr Leu Gly His Arg Leu Glu Arg Val Val Phe \$140\$ \$150\$

Leu Thr Gly Ala Arg Gly Arg Arg Ala Pro Pro Gly Met Ala Val 155 160 165

Val Thr Leu Gly Glu Glu Arg Pro Ile Gly His Leu His Leu Ala 170 175 180

Leu Arg His Leu Leu Glu Gln His Gly Asp Asp Phe Asp Trp Phe 185 190 195

Phe Leu Val Pro Asp Thr Thr Tyr Thr Glu Ala His Gly Leu Ala 200 205 210

Arg Leu Thr Gly His Leu Ser Leu Ala Ser Ala Ala His Leu Tyr 215 220 225

Leu Gly Arg Pro Gln Asp Phe Ile Gly Gly Glu Pro Thr Pro Gly

Arg Tyr Cys His Gly Gly Phe Gly Val Leu Leu Ser Arg Met Leu 245 250 250

Leu Gln Gln Leu Arg Pro His Leu Glu Gly Cys Arg Asn Asp Ile 260 265 270

Val Ser Ala Arg Pro Asp Glu Trp Leu Gly Arg Cys Ile Leu Asp Ala Thr Gly Val Gly Cys Thr Gly Asp His Glu Gly Val His Tyr Ser His Leu Glu Leu Ser Pro Gly Glu Pro Val Gln Glu Gly Asp 305 310 Pro His Phe Arg Ser Ala Leu Thr Ala His Pro Val Arg Asp Pro 320 Val His Met Tyr Gln Leu His Lys Ala Phe Ala Arg Ala Glu Leu 340 Glu Arg Thr Tyr Gln Glu Ile Gln Glu Leu Gln Trp Glu Ile Gln Asn Thr Ser His Leu Ala Val Asp Gly Asp Arg Ala Ala Ala Trp 370 Pro Val Gly Ile Pro Ala Pro Ser Arg Pro Ala Ser Arg Phe Glu 385 Val Leu Arg Trp Asp Tyr Phe Thr Glu Gln His Ala Phe Ser Cys 395 Ala Asp Gly Ser Pro Arg Cys Pro Leu Arg Gly Ala Asp Arg Ala 415 Asp Val Ala Asp Val Leu Gly Thr Ala Leu Glu Glu Leu Asn Arg 430 Arg Tyr His Pro Ala Leu Arg Leu Gln Lys Gln Gln Leu Val Asn 440 Gly Tyr Arg Arg Phe Asp Pro Ala Arg Gly Met Glu Tyr Thr Leu Asp Leu Gln Leu Glu Ala Leu Thr Pro Gln Gly Gly Arg Arg Pro Leu Thr Arg Arg Val Gln Leu Leu Arg Pro Leu Ser Arg Val Glu 485 490 Ile Leu Pro Val Pro Tyr Val Thr Glu Ala Ser Arg Leu Thr Val 505 Leu Leu Pro Leu Ala Ala Glu Arg Asp Leu Ala Pro Gly Phe 515 520 Leu Glu Ala Phe Ala Thr Ala Ala Leu Glu Pro Gly Asp Ala Ala 530 Ala Ala Leu Thr Leu Leu Leu Tyr Glu Pro Arg Gln Ala Gln 550 555 Arg Val Ala His Ala Asp Val Phe Ala Pro Val Lys Ala His Val Ala Glu Leu Glu Arg Arg Phe Pro Gly Ala Arg Val Pro Trp Leu 575 585

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Ser Val Gln Thr Ala Ala Pro Ser Pro Leu Arg Leu Met Asp Leu
                  590
  Leu Ser Lys Lys His Pro Leu Asp Thr Leu Phe Leu Leu Ala Gly
                  605
                                      610
  Pro Asp Thr Val Leu Thr Pro Asp Phe Leu Asn Arg Cys Arg Met
                  620
  His Ala Ile Ser Gly Trp Gln Ala Phe Phe Pro Met His Phe Gln
                                      640
 Ala Phe His Pro Gly Val Ala Pro Pro Gln Gly Pro Gly Pro Pro
                  650
                                      655
  Glu Leu Gly Arg Asp Thr Gly Arg Phe Asp Arg Gln Ala Ala Ser
 Glu Ala Cys Phe Tyr Asn Ser Asp Tyr Val Ala Ala Arg Gly Arg
                                      685
 Leu Ala Ala Ser Glu Gln Glu Glu Leu Leu Glu Ser Leu
 Asp Val Tyr Glu Leu Phe Leu His Phe Ser Ser Leu His Val Leu
 Arg Ala Val Glu Pro Ala Leu Leu Gln Arg Tyr Arg Ala Gln Thr
                                      730
 Cys Ser Ala Arg Leu Ser Glu Asp Leu Tyr His Arg Cys Leu Gln
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 Ser Val Leu Glu Gly Leu Gly Ser Arg Thr Glr Leu Ala Met Leu
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<220>
<223> Synthetic oligonucleotide probe
<400> 328
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<210> 329
<211> 20
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<213> Artificial Sequence
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<223> Synthetic oligonucleotide probe
<400> 329
 atggctcagt gtgcagacag 20
<210> 330
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<400> 330
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<400> 331
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<210> 332
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<212> DNA
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 gctttttaga agcttgattt cctttgaaga tgaaagacta gcggaagctc 200
 tgcctctttc cccagtgggc gagggaactc ggggcgattg gctgggaact 250
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ccatcaataa gaaatttctc agcctggccg aaaatggttg gccccacgaa 350
gccacgacaa ctggaggcaa agagggttgc tcaacgcccc gcctcattgg 400
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catggttatg acaaggacc cgttttggac gtctggaaca tgcgacttgt 800
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<210> 334

<211> 153

<212> PRT

<213> Homo sapiens

<400> 334

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Ala Ala Ala Thr Arg Gly Leu Pro Ala Ala Arg Val Arg Trp Glu 20 25 30

Ser Ser Phe Ser Arg Thr Val Val Ala Pro Ser Ala Val Ala Gly 35 40 45

Lys Arg Pro Pro Glu Pro Thr Thr Pro Trp Gln Glu Asp Pro Glu
50 55 60

Pro Glu Asp Glu Asn Leu Tyr Glu Lys Asn Pro Asp Ser His Gly 65 70 75

Tyr Asp Lys Asp Pro Val Leu Asp Val Trp Asn Met Arg Leu Val 80 85 90

Phe Phe Phe Gly Val Ser Ile Ile Leu Val Leu Gly Ser Thr Phe 95 100 105

Val Ala Tyr Leu Pro Asp Tyr Arg Met Lys Glu Trp Ser Arg Arg 110 115 120

Glu Ala Glu Arg Leu Val Lys Tyr Arg Glu Ala Asn Gly Leu Pro 125 130

Ile Met Glu Ser Asn Cys Phe Asp Pro Ser Lys Ile Gln Leu Pro 140 145 150 Glu Asp Glu

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<211> 442
<212> DNA
<213> Homo sapiens
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 gaccacaccg tggcaagagg acccagaacc cgaggacgaa aacttgtatg 200
 agaagaaccc agactcccat ggttatgaca aggaccccgt tttggacgtc 250
 tggaacatgc gacttgtctt cttctttggc gtctccatca tcctggtcct 300
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<212> DNA
<213> Artificial Sequence
<220>
<223> Synthetic oligonucleotide probe
<400> 336
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<213> Artificial Sequence
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<223> Synthetic oligonucleotide probe
<400> 337
ggtgcttctt gagccccact tagc 24
<210> 338
<211> 40
<212> DNA
<213> Artificial Sequence
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<210> 339
<211> 2162
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<210> 340 <211> 574

<212> PRT

<213> Homo sapiens

<400> 340

Met Pro Leu Ala Leu Leu Val Leu Leu Leu Gly Pro Gly Gly 1 5 10 10

Trp Cys Leu Ala Glu Pro Pro Arg Asp Ser Leu Arg Glu Glu Leu 20 25 30

Val Ile Thr Pro Leu Pro Ser Gly Asp Val Ala Ala Thr Phe Gln 35 40 45

Phe Arg Thr Arg Trp Asp Ser Glu Leu Gln Arg Glu Gly Val Ser 50 55

His Tyr Arg Leu Phe Pro Lys Ala Leu Gly Gln Leu Ile Ser Lys 65 70 75

Tyr Ser Leu Arg Glu Leu His Leu Ser Phe Thr Gln Gly Phe Trp 80 85 90

Arg Thr Arg Tyr Trp Gly Pro Pro Phe Leu Gln Ala Pro Ser Gly 95 100

Ala Glu Leu Trp Val Trp Phe Gln Asp Thr Val Thr Asp Val Asp 110 115 120

Lys Ser Trp Lys Glu Leu Ser Asn Val Leu Ser Gly Ile Phe Cys 125 130 135

Ala Ser Leu Asn Phe Ile Asp Ser Thr Asn Thr Val Thr Pro Thr 140 145 150

Ala Ser Phe Lys Pro Leu Gly Leu Ala Asn Asp Thr Asp His Tyr Phe Leu Arg Tyr Ala Val Leu Pro Arg Glu Val Val Cys Thr Glu 170 Asn Leu Thr Pro Trp Lys Lys Leu Leu Pro Cys Ser Ser Lys Ala 185 Gly Leu Ser Val Leu Leu Lys Ala Asp Arg Leu Phe His Thr Ser 200 Tyr His Ser Gln Ala Val His Ile Arg Pro Val Cys Arg Asn Ala Arg Cys Thr Ser Ile Ser Trp Glu Leu Arg Gln Thr Leu Ser Val Val Phe Asp Ala Phe Ile Thr Gly Gln Gly Lys Lys Asp Trp Ser 245 Leu Phe Arg Met Phe Ser Arg Thr Leu Thr Glu Pro Cys Pro Leu Ala Ser Glu Ser Arg Val Tyr Val Asp Ile Thr Thr Tyr Asn Gln Asp Asn Glu Thr Leu Glu Val His Pro Pro Pro Thr Thr Tyr 290 295 Gln Asp Val Ile Leu Gly Thr Arg Lys Thr Tyr Ala Ile Tyr Asp Leu Leu Asp Thr Ala Met Ile Asn Asn Ser Arg Asn Leu Asn Ile Gln Leu Lys Trp Lys Arg Pro Pro Glu Asn Glu Ala Pro Pro Val 335 Pro Phe Leu His Ala Gln Arg Tyr Val Ser Gly Tyr Gly Leu Gln 360 Lys Gly Glu Leu Ser Thr Leu Leu Tyr Asn Thr His Pro Tyr Arg 365 Ala Phe Pro Val Leu Leu Leu Asp Thr Val Pro Trp Tyr Leu Arg 385 Leu Tyr Val His Thr Leu Thr Ile Thr Ser Lys Gly Lys Glu Asn Lys Pro Ser Tyr Ile His Tyr Gln Pro Ala Gln Asp Arg Leu Gln Pro His Leu Leu Glu Met Leu Ile Gln Leu Pro Ala Asn Ser Val 430 Thr Lys Val Ser Ile Gln Phe Glu Arg Ala Leu Leu Lys Trp Thr Glu Tyr Thr Pro Asp Pro Asn His Gly Phe Tyr Val Ser Pro Ser 455 460

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Val Leu Ser Ala Leu Val Pro Ser Met Val Ala Ala Lys Pro Val
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                                       475
 Asp Trp Glu Glu Ser Pro Leu Phe Asn Ser Leu Phe Pro Val Ser
 Asp Gly Ser Asn Tyr Phe Val Arg Leu Tyr Thr Glu Pro Leu Leu
                  500
                                       505
 Val Asn Leu Pro Thr Pro Asp Phe Ser Met Pro Tyr Asn Val Ile
                  515
 Cys Leu Thr Cys Thr Val Val Ala Val Cys Tyr Gly Ser Phe Tyr
                  530
                                       535
                                                           540
 Asn Leu Leu Thr Arg Thr Phe His Ile Glu Glu Pro Arg Thr Gly
                  545
                                                           555
 Gly Leu Ala Lys Arg Leu Ala Asn Leu Ile Arg Arg Ala Arg Gly
                  560
                                      565
                                                           570
 Val Pro Pro Leu
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·<400> 341
 tggacaccgt accctggtat ctgc 24
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<211> 24
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<221> Artificial Sequence
<222> 1-24
<223> Synthetic oligonucleotide probe
<400> 342
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<210> 343
<211> 44
<212> DNA
<213> Artificial Sequence
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<400> 343
 tgtatgtgca cacceteace ateaceteca agggeaagga gaac 44
<210> 344
<211> 762
<212> DNA
<213> Homo sapiens
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<210> 345

<211> 111

<212> PRT

<213> Homo sapiens

<400> 345

Met Gly Ser Ser Ser Phe Leu Val Leu Met Val Ser Leu Val Leu  $1 \hspace{1cm} 5 \hspace{1cm} 10 \hspace{1cm} 15$ 

Val Thr Leu Val Ala Val Glu Gly Val Lys Glu Gly Ile Glu Lys 20 25 30

Ala Gly Val Cys Pro Ala Asp Asn Val Arg Cys Phe Lys Ser Asp 35 40 45

Pro Pro Gln Cys His Thr Asp Gln Asp Cys Leu Gly Glu Arg Lys
50 55 60

Cys Cys Tyr Leu His Cys Gly Phe Lys Cys Val Ile Pro Val Lys
65 70 75

Glu Leu Glu Glu Gly Gly Asn Lys Asp Glu Asp Val Ser Arg Pro
80 85 90

Tyr Pro Glu Pro Gly Trp Glu Ala Lys Cys Pro Gly Ser Ser Ser 95 100 105

Thr Arg Cys Pro Gln Lys 110 <210> 346 <211> 2528 <212> DNA <213> Homo sapiens

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<210> 347
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<sup>&</sup>lt;211> 600

<sup>&</sup>lt;212> PRT

<sup>&</sup>lt;213> Homo sapiens

<sup>&</sup>lt;400> 347

Met Arg Ser Cys Leu Trp Arg Cys Arg His Leu Ser Gln Gly Val 1 5 10 15

Gln Trp Ser Leu Leu Leu Ala Val Leu Val Phe Phe Leu Phe Ala 20 25 30

Leu Pro Ser Phe Ile Lys Glu Pro Gln Thr Lys Pro Ser Arg His 35 40 45

65 70 75

Tyr	Ala	Glu	Pro	Ala 80	Pro	Glu	Asn	Asn	Ala 85	Leu	Asn	Thr	Gln	Thr 90
Gln	Pro	Lys	Ala	His 95	Thr	Thr	Gly	Asp	Arg 100	Gly	Lys	Glu	Ala	Asn 105
Gln	Ala	Pro	Pro	Glu 110	Glu	Gln	Asp	Lys	Val 115	Pro	His	Thr	Ala	Gln 120
Arg	Ala	Ala	Trp	Lys 125	Ser	Pro	Glu	Lys	Glu 130	Lys	Thr	Met	Val	Asn 135
Thr	Leu	Ser	Pro	Arg 140	Gly	Gln	Asp	Ala	Gly 145	Met	Ala	Ser	Gly	Arg 150
Thr	Glu	Ala	Gln	Ser 155	Trp	Lys	Ser	Gln	Asp 160	Thr	Lys	Thr	Thr	Gln 165
Gly	Asn	Gly	Gly	Gln 170	Thr	Arg	Lys	Leu	Thr 175	Ala	Ser	Arg	Thr	Val 180
Ser	Glu	Lys	His	Gln 185	Gly	Lys	Ala	Ala	Thr 190	Thr	Ala	Lys	Thr	Leu 195
Ile	Pro	Lys	Ser	Gln 200	His	Arg	Met	Leu	Ala 205	Pro	Thr	Gly	Ala	Val 210
Ser	Thr	Arg	Thr	Arg 215	Gln	Lys	Gly	Val	Thr 220	Thr	Ala	Val	Ile	Pro 225
Pro	Lys	Glu	Lys	Lys 230	Pro	Gln	Ala	Thr	Pro 235	Pro	Pro	Ala	Pro	Phe 240
Gln	Ser	Pro	Thr	Thr 245	Gln	Arg	Asn	Gln	Arg 250	Leu	Lys	Ala	Ala	Asn 255
Phe	Lys	Ser	Glu	Pro 260	Arg	Trp	Asp	Phe	Glu 265	Glu	Lys	Tyr	Ser	Phe 270
Glu	Ile	Gly	Gly	Leu 275	Gln	Thr	Thr	Суз	Pro 280	Asp	Ser	Val	ГÀЗ	Ile 285
Lys	Ala	Ser	Lys	Ser 290	Leu	Trp	Leu	Gln	Lys 295	Leu	Phe	Leu	Pro	Asn 300
Leu	Thr	Leu	Phe	Leu 305	Asp	Ser	Arg	His	Phe 310	Asn	Gln	Ser	Glu	Trp 315
Asp	Arg	Leu	Glu	His 320	Phe	Ala	Pro	Pro	Phe 325	Gly	Phe	Met	Glu	Leu 330
Asn	Tyr	Ser	Leu	Val 335	Gln	Lys	Val	Val	Thr 340	Arg	Phe	Pro	Pro	Val 345
Pro	Gln	Gln	Gln	Leu 350	Leu	Leu	Ala	Ser	Leu 355	Pro	Ala	Gly	Ser	Leu 360
Arg	Cys	Ile	Thr	Cys 365	Ala	Val	Val	Gly	Asn 370	Gly	Gly	Ile	Leu	Asn 375
Asn	Ser	His	Met	Gly	Gln	Glu	Ile	Asp	Ser	His	Asp	Tyr	Val	Phe

385	390										
ty Tyr Glu Gln Asp Val	Gly										
400	405										
ar Ala Phe Ser Leu Thr	Gln										
415	420										
y Phe Lys Asn Val Pro	Leu										
430	435										
e Leu Glu Gly Thr Arg	Asp										
445	450										
et Asn Gln Thr Val Met	Ser										
460	465										
g Pro Gln Glu Ala Phe .	Arg										
475	480										
u Leu Leu His Pro Asp	Phe										
490	495										
u Arg Ser Lys Thr Leu :	Asp										
505	510										
o Thr Thr Gly Ala Leu :	Leu										
520	525										
p Gln Val Ser Ala Tyr (	Gly										
535	540										
e Ser Asp His Tyr Tyr 1	Asp										
550	555										
r Ile Asn His Asp Phe I	Lys										
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u His Asp Glu Gly Ile I	[le										
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y Thr Ala Lys Ala Lys A	Asn										
595	500										
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agtgcagcaa acacttccat agactttatc acaacaccag agactgcacc 200											
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attectgeat actataaaag atgegeeagg ettettacee ggetggetgt 250 eagteeagtg tgeatggagg ataagtgage agacegtaca ggageageae 300

accaggagcc atgagaagtg ccttggaaac caacagggaa acagaactat 350

ctttatacac atcccctcat ggacaagaga tttatttttg cagacagact 400 cttccataag tcctttgagt tttgtatgtt gttgacagtt tgcagatata 450 tattcgataa atcagtgtac ttgacagtgt tatctgtcac ttattt 496

<210> 349

<211> 91

<212> PRT

<213> Homo sapiens

<400> 349

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Leu Gly Pro Ser Pro Glu Gln Arg Val Glu Ile Val Pro Arg Asp 20 25 30

Leu Arg Met Lys Asp Lys Phe Leu Lys His Leu Thr Gly Pro Leu 35 40 45

Tyr Phe Ser Pro Lys Cys Ser Lys His Phe His Arg Leu Tyr His
50 55 60

Asn Thr Arg Asp Cys Thr Ile Pro Ala Tyr Tyr Lys Arg Cys Ala
65 70 75

Arg Leu Leu Thr Arg Leu Ala Val Ser Pro Val Cys Met Glu Asp 80 85 90

Lys

<210> 350

<211> 1141

<212> DNA

<213> Homo sapiens

<400> 350

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actetacea getggecce cagtetacaa ecetgeaget ecteeteet 650 atatgecace acageeetet taceegggag ectgaggaac cageeatgte 700 tetgetgece etteagtgat gecaacettg ggagatgece teateetgta 750 ectgeatetg gteetggggg tggeaggagt ecteeageea ecaggeeeea 800 gaccaageea ageeetggge ectactgggg acagageeee agggaagtgg 850 aacaggaget gaactagaac tatgaggggt tggggggagg gettggaatt 900 atgggetatt teaaatagt ecetetgete ecaagateee ageeaggaag 1000 getggggeee tactgttgt eceetetggg etggggtggg gggagggagg 1050 aggtteegte ageagetgge agtageeete etetetgget geeeeactgg 1100 ecacatetet ggeetgetag attaaagetg taaagacaaa a 1141

<210> 351 <211> 197 <212> PRT <213> Homo sapiens

<400> 351

Met Pro Pro Ala Gly Leu Arg Arg Ala Ala Pro Leu Thr Ala Ile 1 5 10 15

Ala Leu Leu Val Leu Gly Ala Pro Leu Val Leu Ala Gly Glu Asp 20 25 30

Cys Leu Trp Tyr Leu Asp Arg Asn Gly Ser Trp His Pro Gly Phe 35 40 45

Asn Cys Glu Phe Phe Thr Phe Cys Cys Gly Thr Cys Tyr His Arg
50 55 60

Tyr Cys Cys Arg Asp Leu Thr Leu Leu Ile Thr Glu Arg Gln Gln
65 70 75

Lys His Cys Leu Ala Phe Ser Pro Lys Thr Ile Ala Gly Ile Ala 80 85 90

Ser Ala Val Ile Leu Phe Val Ala Val Val Ala Thr Thr Ile Cys 95 100 105

Cys Phe Leu Cys Ser Cys Cys Tyr Leu Tyr Arg Arg Arg Gln Gln
110 115

Leu Gln Ser Pro Phe Glu Gly Gln Glu Ile Pro Met Thr Gly Ile 125 130 135

Pro Val Gln Pro Val Tyr Pro Tyr Pro Gln Asp Pro Lys Ala Gly 140 145 150

Pro Ala Pro Pro Gln Pro Gly Phe Met Tyr Pro Pro Ser Gly Pro 155 160 165

Ala Pro Gln Tyr Pro Leu Tyr Pro Ala Gly Pro Pro Val Tyr Asn 170 175 180

## Pro Ala Ala Pro Pro Pro Tyr Met Pro Pro Gln Pro Ser Tyr Pro 185 190 195

Gly Ala

<210> 352 <211> 3226

<212> DNA

<213> Homo sapiens

<400> 352

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<212> PRT

<213> Homo sapiens

<400> 353

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Trp Cys Gln Ser Thr Glu Ala Ser Pro Lys Arg Ser Asp Gly Thr 35 40 45

Pro Phe Pro Trp Asn Lys Ile Arg Leu Pro Glu Tyr Val Ile Pro 50 55 60

Val His Tyr Asp Leu Leu Ile His Ala Asn Leu Thr Thr Leu Thr 65 70 75

Phe Trp Gly Thr Thr Lys Val Glu Ile Thr Ala Ser Gln Pro Thr 80 85 90

Ser Thr Ile Ile Leu His Ser His His Leu Gln Ile Ser Arg Ala 95 100 105

Thr Leu Arg Lys Gly Ala Gly Glu Arg Leu Ser Glu Glu Pro Leu 110 115 120

Gln Val Leu Glu His Pro Pro Gln Glu Gln Ile Ala Leu Leu Ala 125 130 135

Pro Glu Pro Leu Val Gly Leu Pro Tyr Thr Val Val Ile His 140 145 150

Tyr Ala Gly Asn Leu Ser Glu Thr Phe His Gly Phe Tyr Lys Ser 155 160 165

Thr Tyr Arg Thr Lys Glu Gly Glu Leu Arg Ile Leu Ala Ser Thr 170 175 180

Gln Phe Glu Pro Thr Ala Ala Arg Met Ala Phe Pro Cys Phe Asp 185 190 195

Glu Pro Ala Phe Lys Ala Ser Phe Ser Ile Lys Ile Arg Arg Glu 200 205 210

Pro Arg His Leu Ala Ile Ser Asn Met Pro Leu Val Lys Ser Val

				21	5				22	0				225
Th	r Va	l Al	a Glı	u Gl <u>s</u> 230	y Lei )	u Ile	e Gl	u Ası	р Ні: 23	s Ph	e Ası	o Va	l Th:	r Val 240
Lys	s Me	t Se	r Thi	r Ty:	r Let	ı Val	l Ala	a Phe	e Ile 250		e Se:	r Asj	p Phe	e Glu 255
Sei	r Vai	l Se	r Lys	3 Ile 260	Thi	c Lys	s Se	r Gly	y Vai 26	l Lys	s Val	l Sei	r Val	L Tyr 270
Alá	a Vai	l Pro	o Asp	275	s Ile	e Asr	n Glr	n Ala	a Asp 280		c Ala	a Lei	ı Asp	Ala 285
Ala	ı Val	l Th:	r Leu	1 Let 290	ı Glu	ı Phe	э Туз	r Glu	295	Э Туг Б	r Ph∈	e Sei	: Ile	Pro 300
Tyr	Pro	) Lei	ı Pro	305	Gln	Asp	Leu	ı Ala	a Ala 310		e Pro	Asp	Phe	Gln 315
Ser	: Gly	/ Ala	a Met	Glu 320	Asn	Trp	Gl3	/ Leu	Thr 325	Thr	Туг	Arg	g Glu	Ser 330
Ala	. Leu	ı Leı	ı Phe	335	Ala	Glu	Lys	s Ser	Ser 340	Ala	Ser	Ser	Lys	Leu 345
Gly	Il∈	Thr	r Val	Thr 350	Val	Ala	His	Glu	Leu 355	Ala	His	Gln	Trp	Phe 360
Gly	Asn	let	ı Val	Thr 365	Met	Glu	Trp	Trp	370	Asp	Leu	Trp	Leu	Asn 375
Glu	Gly	Phe	e Ala	Lys 380	Phe	Met	Glu	. Phe	Val 385		Val	Ser	Val	Thr 390
			ı Leu	395					400					405
			Glu	410					415					420
			Glu	425					430					435
			Asp	440					445					450
			Ala	455					460					465
			Ser	470					475					480
			Ser	485					490					495
			Ser	500					505					510
			Gly	212					520			Thr	Trp	Thr 525
Leu	Gln	Ara	Gly	Phe	Pro	T.e11	TTe	Thr	Tla	ጥኮሎ	W-1	7) 20 00	C1	70

				53	0				535	5				540
Ası	n Val	l Hi	s Me	t Ly: 54:	s Gli 5	n Glı	ı His	з Ту	r Met 550	Lys	s Gly	y Se:	r Ası	o Gly 555
Ala	a Pro	Ası	p Thi	r Gly 560	у Туз Э	r Lei	ı Trp	o Hi:	s Val 565	l Pro	) Le	ı Th:	r Phe	= Ile 570
Thr	Ser	: Ly:	s Sei	575	n Met	Val	L His	s Aro	g Phe 580		ı Leı	ı Lys	5 Thi	Lys 585
Thr	Asp	Val	l Leı	1 Ile 590	e Leu )	ı Pro	Glu	ı Glı	ı Val 595		Trp	o Ile	e Lys	Phe 600
Asn	Val	. Gl	y Met	605	ı Gly	7 Tyr	Туг	: Ile	Val		Туг	Glu	a Asp	Asp 615
Gly	Trp	Asp	Ser	620	ı Thr	Gly	/ Let	ı Leı	Lys 625		Thr	His	Thr	Ala 630
Val	Ser	Ser	Asn	Asp 635	Arg	, Ala	. Ser	Leu	Ile 640		Asn	Ala	Phe	Gln 645
Leu	Val	Ser	: Ile	650	Lys	Leu	Ser	: Ile	655	Lys	Ala	Lev	Asp	Leu 660
Ser	Leu	Tyr	Leu	Lys 665	His	Glu	Thr	Glu	1le 670		Pro	Val	Phe	Gln 675
Gly	Leu	Asn	Glu	Leu 680	Ile	Pro	Met	Tyr	Lys 685	Leu	Met	Glu	Lys	Arg 690
Asp	Met	Asn	Glu	Val 695	Glu	Thr	Gln	Phe	Lys 700	Ala	Phe	Leu	Ile	Arg 705
Leu	Leu	Arg	Asp	Leu 710	Ile	Asp	Lys	Gln	Thr 715	Trp	Thr	Asp	Glu	Gly 720
Ser	Val	Ser	Glu	Gln 725	Met	Leu	Arg	Ser	Glu 730	Leu	Leu	Leu	Leu	Ala 735
Cys	Val	His	Asn	Tyr 740	Gln	Pro	Cys	Val	Gln 745	Arg	Ala	Glu	Gly	Tyr 750
Phe	Arg	Lys	Trp	Lys 755	Glu	Ser	Asn	Gly	Asn 760	Leu	Ser	Leu	Pro	Val 765
Asp	Val	Thr	Leu	Ala 770	Val	Phe	Ala	Val	Gly 775	Ala	Gln	Ser	Thr	Glu 780
Gly	Trp	Asp	Phe	Leu 785	Tyr	Ser	Lys	Tyr	Gln 790	Phe	Ser	Leu	Ser	Ser 795
Thr	Glu	Lys	Ser	Gln 800	Ile	Glu	Phe	Ala	Leu 805	Cys	Arg	Thr	Gln	Asn 810
Lys	Glu	Lys	Leu	Gln 815	Trp	Leu	Leu	Asp	Glu 820	Ser	Phe	Lys	Gly	Asp 825
Lys	Ile	Lys	Thr	Gln 830	Glu	Phe	Pro	Gln	Ile 835	Leu	Thr	Leu	Ile	Gly 840
Arg	Asn	Pro	Val	Gly	Tyr	Pro	Leu	Ala	Trp	Gln	Phe	Leu	Arg	Lys

845 850 855 Asn Trp Asn Lys Leu Val Gln Lys Phe Glu Leu Gly Ser Ser Ser 860 865 870 Ile Ala His Met Val Met Gly Thr Thr Asn Gln Phe Ser Thr Arg 885 Thr Arg Leu Glu Glu Val Lys Gly Phe Phe Ser Ser Leu Lys Glu Asn Gly Ser Gln Leu Arg Cys Val Gln Gln Thr Ile Glu Thr Ile 905 910 915 Glu Glu Asn Ile Gly Trp Met Asp Lys Asn Phe Asp Lys Ile Arg 925 930 Val Trp Leu Gln Ser Glu Lys Leu Glu Arg Met

935

<210> 354 <211> 1587 <212> DNA

<213> Homo sapiens

<400> 354 cagccacaga cgggtcatga gcgcggtatt actgctggcc ctcctggggt 50 teatectece actgecagga gtgcaggege tgetetgeca gtttgggaca 100 gttcagcatg tgtggaaggt gtccgaccta ccccggcaat ggacccctaa 150 gaacaccagc tgcgacagcg gcttgqggtg ccaggacacg ttgatgctca 200 ttgagagcgg accccaagtg agcctggtgc tctccaaggg ctgcacggag 250 gccaaggace aggagceeeg egteactgag caceggatgg geeeeggeet 300 ctccctgatc tcctacacct tcgtgtgccg ccaggaggac ttctgcaaca 350 acctegttaa cteecteeeg etttgggeee caeageeeee ageagaeeea 400 ggatccttga ggtgcccagt ctgcttgtct atggaaggct gtctggaggg 450 gacaacagaa gagatctgcc ccaaggggac cacacactgt tatgatggcc 500 teeteagget caggggagga ggeatettet ceaatetgag agteeaggga 550 tgcatgcccc agccaggttg caacctgctc aatgggacac aggaaattgg 600 gcccgtgggt atgactgaga actgcaatag gaaagatttt ctgacctgtc 650 atogggggac caccattatg acacacggaa acttggctca agaacccact 700 gattggacca catcgaatac cgagatgtgc gaggtggggc aggtgtgtca 750 ggagacgctg ctgctcatag atgtaggact cacatcaacc ctggtgggga 800 caaaaggctg cagcactgtt ggggctcaaa attcccagaa gaccaccatc 850 cactcagece etectggggt gettgtggee teetataeec aettetgete 900 ctcqqacctq tqcaataqtq ccaqcaqcaq caqcqttctq ctqaactccc 950

tecetectea agetgeecet gteecaggag aceggeagtg tectacetgt 1000 gtgeagecee ttggaacetg tteaagtgge teececegaa tgacetgeee 1050 caggggegee acteattgtt atgatgggta catteatete teaggaggtg 1100 ggetgteeae caaaatgage atteaggget gegtggeeca acetteeage 1150 ttettgttga aceacaceag acaaateggg atetteetet eggetgagaa 1200 gegtgatgtg cageeteetg eeteteagea tgagggaggt ggggetgagg 1250 geetggagte teteacttgg ggggtggge tggeactgge eecagegetg 1300 tggtggggag tggtttgeee tteetgetaa etetatace eecaegatte 1350 tteacegetg etgaceacee acaeteaace teeetetgae eteataacet 1400 aatggeettg gacaceagat tetteeeat tetgteeatg aateatete 1450 eecaecacaa ateateata tetaeteace taacagcaac actggggag 1550 geetggagea teeggacttg eectatggga gaggggaege tggaggagtg 1550 geetggagea teeggacttg eectatggga gaggggaege tggaggagtg 1550 geetgcatgta tetgataata eagaeeetg eetttea 1587

<210> 355 <211> 437

<212> PRT

<213> Homo sapiens

<400> 355

Met Ser Ala Val Leu Leu Leu Ala Leu Leu Gly Phe Ile Leu Pro 1  $\phantom{000}5\phantom{000}$  10  $\phantom{000}15\phantom{000}$ 

Leu Pro Gly Val Gln Ala Leu Leu Cys Gln Phe Gly Thr Val Gln 20 25 30

His Val Trp Lys Val Ser Asp Leu Pro Arg Gln Trp Thr Pro Lys 35 40 45

Asn Thr Ser Cys Asp Ser Gly Leu Gly Cys Gln Asp Thr Leu Met 50 55 60

Leu Ile Glu Ser Gly Pro Gln Val Ser Leu Val Leu Ser Lys Gly 65 70 75

Cys Thr Glu Ala Lys Asp Gln Glu Pro Arg Val Thr Glu His Arg 80 85 90

Met Gly Pro Gly Leu Ser Leu Ile Ser Tyr Thr Phe Val Cys Arg 95 100 105

Gln Glu Asp Phe Cys Asn Asn Leu Val Asn Ser Leu Pro Leu Trp 110 115 120

Ala Pro Gln Pro Pro Ala Asp Pro Gly Ser Leu Arg Cys Pro Val 125 130

Cys Leu Ser Met Glu Gly Cys Leu Glu Gly Thr Thr Glu Glu Ile 140  $$145\$ 

Cys Pro Lys Gly Thr Thr His Cys Tyr Asp Gly Leu Leu Arg Leu

155 160 165

Arg Gly Gly Gly Ile Phe Ser Asn Leu Arg Val Gln Gly Cys Met 170 175 180

Pro Gln Pro Gly Cys Asn Leu Leu Asn Gly Thr Gln Glu Ile Gly 185 190 190

Pro Val Gly Met Thr Glu Asn Cys Asn Arg Lys Asp Phe Leu Thr 200 205 210

Cys His Arg Gly Thr Thr Ile Met Thr His Gly Asn Leu Ala Gln
215 220 225

Glu Pro Thr Asp Trp Thr Thr Ser Asn Thr Glu Met Cys Glu Val 230 235 240

Gly Gln Val Cys Gln Glu Thr Leu Leu Leu Ile Asp Val Gly Leu 245 250 255

Thr Ser Thr Leu Val Gly Thr Lys Gly Cys Ser Thr Val Gly Ala 260 265 270

Gln Asn Ser Gln Lys Thr Thr Ile His Ser Ala Pro Pro Gly Val 275 280 285

Leu Val Ala Ser Tyr Thr His Phe Cys Ser Ser Asp Leu Cys Asn 290 295 300

Ser Ala Ser Ser Ser Ser Val Leu Leu Asn Ser Leu Pro Pro Gln 305 310

Ala Ala Pro Val Pro Gly Asp Arg Gln Cys Pro Thr Cys Val Gln 320 325 330

Pro Leu Gly Thr Cys Ser Ser Gly Ser Pro Arg Met Thr Cys Pro 335

Arg Gly Ala Thr His Cys Tyr Asp Gly Tyr Ile His Leu Ser Gly 350 355

Gly Gly Leu Ser Thr Lys Met Ser Ile Gln Gly Cys Val Ala Gln 365 370 375

Pro Ser Ser Phe Leu Leu Asn His Thr Arg Gln Ile Gly Ile Phe 380 385 390

Ser Ala Arg Glu Lys Arg Asp Val Gln Pro Pro Ala Ser Gln His

Glu Gly Gly Gly Ala Glu Gly Leu Glu Ser Leu Thr Trp Gly Val 410 415 420

Gly Leu Ala Leu Ala Pro Ala Leu Trp Trp Gly Val Val Cys Pro 425 430 435

Ser Cys

<210> 356

<211> 1238

<212> DNA

<213> Homo sapiens

<400> 356 gcgacggca ggacgccccg ttcgcctagc gcgtgctcag gagttggtgt 50 cctgcctgcg ctcaggatga gggggaatct ggccctggtg ggcgttctaa 100 teagectgge ettectgtea etgetgeeat etggacatec teageegget 150 ggcgatgacg cctgctctgt gcagatcctc gtccctggcc tcaaagggga 200 tgcgggagag aagggagaca aaggcgcccc cggacggcct ggaagagtcg 250 gccccacggg agaaaaagga gacatggggg acaaaggaca gaaaggcagt 300 gtgggtcgtc atggaaaaat tggtcccatt ggctctaaag gtgagaaagg 350 agattccggt gacataggac cccctggtcc taatggagaa ccaggcctcc 400 catgtgagtg cagccagctg cgcaaggcca tcggggagat ggacaaccag 450 gtctctcagc tgaccagcga gctcaagttc atcaagaatg ctgtcgccgg 500 tgtgcgcgag acggagagca agatetacet gctggtgaag gaggagaagc 550 gctacgcgga cgcccagctg tcctgccagg gccgcggggg cacgctgagc 600 atgcccaagg acgaggetge caatggcctg atggccgcat acctggcgca 650 ageeggeetg geeegtgtet teateggeat caacgaeetg gagaaggagg 700 gcgccttcgt gtactctgac cactccccca tgcggacctt caacaagtgg 750 cqcaqcqqtq aqcccaacaa tqcctacqac qaqqaqqact qcqtqqaqat 800 ggtggcctcg ggcggctgga acgacgtggc ctgccacacc accatgtact 850 tcatgtgtga gtttgacaag gagaacatgt gagcctcagg ctggggctgc 900 ccattggggg ccccacatgt ccctgcaggg ttggcaggga cagagcccag 950 accatggtgc cagccaggga gctgtccctc tgtgaagggt ggaggctcac 1000 tgagtagagg gctgttgtct aaactgagaa aatggcctat gcttaagagg 1050 aaaatgaaag tgttcctggg gtgctgtctc tgaagaagca gagtttcatt 1100 acctgtattg tagccccaat gtcattatgt aattattacc cagaattgct 1150 cttccataaa gcttgtgcct ttgtccaagc tatacaataa aatctttaag 1200 tagtgcagta gttaagtcca aaaaaaaaa aaaaaaaa 1238

Phe Leu Ser Leu Leu Pro Ser Gly His Pro Gln Pro Ala Gly Asp 20 25 30

<sup>&</sup>lt;210> 357

<sup>&</sup>lt;211> 271

<sup>&</sup>lt;212> PRT

<sup>&</sup>lt;213> Homo sapiens

<sup>&</sup>lt;400> 357

Met Arg Gly Asn Leu Ala Leu Val Gly Val Leu Ile Ser Leu Ala 1 5 10

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Asp Ala Cys Ser Val Gln Ile Leu Val Pro Gly Leu Lys Gly Asp
Ala Gly Glu Lys Gly Asp Lys Gly Ala Pro Gly Arg Pro Gly Arg
Val Gly Pro Thr Gly Glu Lys Gly Asp Met Gly Asp Lys Gly Gln
Lys Gly Ser Val Gly Arg His Gly Lys Ile Gly Pro Ile Gly Ser
Lys Gly Glu Lys Gly Asp Ser Gly Asp Ile Gly Pro Pro Gly Pro
Asn Gly Glu Pro Gly Leu Pro Cys Glu Cys Ser Gln Leu Arg Lys
                 110
Ala Ile Gly Glu Met Asp Asn Gln Val Ser Gln Leu Thr Ser Glu
                                     130
                                                         135
Leu Lys Phe Ile Lys Asn Ala Val Ala Gly Val Arg Glu Thr Glu
                                     145
Ser Lys Ile Tyr Leu Leu Val Lys Glu Glu Lys Arg Tyr Ala Asp
                155
Ala Gln Leu Ser Cys Gln Gly Arg Gly Gly Thr Leu Ser Met Pro
                                     175
Lys Asp Glu Ala Ala Asn Gly Leu Met Ala Ala Tyr Leu Ala Gln
                185
                                     190
Ala Gly Leu Ala Arg Val Phe Ile Gly Ile Asn Asp Leu Glu Lys
                200
                                                         210
Glu Gly Ala Phe Val Tyr Ser Asp His Ser Pro Met Arg Thr Phe
Asn Lys Trp Arg Ser Gly Glu Pro Asn Asn Ala Tyr Asp Glu Glu
Asp Cys Val Glu Met Val Ala Ser Gly Gly Trp Asn Asp Val Ala
                245
                                    250
Cys His Thr Thr Met Tyr Phe Met Cys Glu Phe Asp Lys Glu Asn
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Met

<210> 358

<211> 972

<212> DNA

<213> Homo sapiens

260

<400> 358

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265

270

aggcaccatg aggatcatgc tgctattcac agccatcctg gccttcagcc 200 tagctcagag ctttggggct gtctgtaagg agccacagga ggaggtggtt 250 cctggcgggg gccgcagcaa gagggatcca gatctctacc agctgctcca 300 gagactette aaaageeact catetetgga gggattgete aaageeetga 350 gccaggctag cacagatcct aaggaatcaa catctcccga gaaacgtgac 400 atgcatgact tctttgtggg acttatgggc aagaggagcg tccagccaga 450 gggaaagaca ggacctttct taccttcagt gagggttcct cggccccttc 500 atcccaatca gcttggatcc acaggaaagt cttccctggg aacagaggag 550 cagagacett tataagaete teetaeggat gtgaateaag agaaegteee 600 cagetttgge atecteaagt ateceeegag ageagaatag gtacteeact 650 teeggaetee tggaetgeat taggaagaee tettteeetg teecaateee 700 caggtgcgca cgctcctgtt accctttctc ttccctgttc ttgtaacatt 750 cttgtgcttt gactccttct ccatcttttc tacctgaccc tggtgtggaa 800 actgcatagt gaatateece aaccecaatg ggcattgact gtagaatace 850 ctagagttcc tgtagtgtcc tacattaaaa atataatgtc tctctctatt 900 aaaaaaaaa aa 972

<210> 359

<211> 135

<212> PRT

<213> Homo sapiens

<400> 359

Met Arg Ile Met Leu Leu Phe Thr Ala Ile Leu Ala Phe Ser Leu 1 5 10 15

Ala Gln Ser Phe Gly Ala Val Cys Lys Glu Pro Gln Glu Glu Val 20 25 30

Val Pro Gly Gly Gly Arg Ser Lys Arg Asp Pro Asp Leu Tyr Gln
35 40 45

Leu Leu Gln Arg Leu Phe Lys Ser His Ser Ser Leu Glu Gly Leu
50 55 60

Leu Lys Ala Leu Ser Gln Ala Ser Thr Asp Pro Lys Glu Ser Thr 65 70 75

Ser Pro Glu Lys Arg Asp Met His Asp Phe Phe Val Gly Leu Met 80 85 90

Gly Lys Arg Ser Val Gln Pro Glu Gly Lys Thr Gly Pro Phe Leu 95

Pro Ser Val Arg Val Pro Arg Pro Leu His Pro Asn Gln Leu Gly 110 115 120

## Ser Thr Gly Lys Ser Ser Leu Gly Thr Glu Glu Gln Arg Pro Leu 125 130 135

<210> 360

<211> 1738

<212> DNA

<213> Homo sapiens

<400> 360

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cccaagctcc agtgtggaaa cttecttect ggetggttt ccagaactac 1400 agagggaatgg accacagtet tecagggtee etectegtee accaaceggg 1450 agectecace ttggccatee gteagetatg aatggettt taaacaaace 1500 cacgteccag cetgggtaac atggtaaage ecegteteta caaaaaaate 1550 caagttagee gggcatggt gtggegetgg agetgagga ggaggatege 1600 actgaggtgg aggtggg aggtgggaa ggaggatege 1650 ttgageetgg gtgacagag etgcagtgg ctgaagatg accactgcac 1700 tecageetgg gtgacagag aagaceetgt etcaaaaa 1738

<210> 361

<211> 159

<212> PRT

<213> Homo sapiens

<400> 361

Met Ser Cys Val Leu Gly Gly Val Ile Pro Leu Gly Leu Leu Phe 1 5 10 15

Leu Val Cys Gly Ser Gln Gly Tyr Leu Leu Pro Asn Val Thr Leu 20 25 30

Leu Glu Glu Leu Leu Ser Lys Tyr Gln His Asn Glu Ser His Ser 35 40 45

Arg Val Arg Arg Ala Ile Pro Arg Glu Asp Lys Glu Glu Ile Leu
50 55 60

Met Leu His Asn Lys Leu Arg Gly Gln Val Gln Pro Gln Ala Ser 65 70 75

Asn Met Glu Tyr Met Val Ser Ala Gly Ser Gly Arg Arg Gly Trp 80 85 90

His Arg Gly Trp Gly Leu Gly His Gln Pro Ala Leu Phe Pro Ser 95 100 105

Gln Leu Cys Ser Pro Ala Ser Ala Cys Asp Gly Trp Leu Arg Val 110 115 120

Ser Ser Gly Arg Gly Gly Ser Arg Leu Cys Ser Val Leu Phe Val 125 130 135

Cys Phe Glu Thr Gly Ser His Ser Ala Thr Asp Ala Gly Val Gln
140 145 150

Trp His Asn Arg His Ala Leu Lys Pro 155

<210> 362

<211> 422

<212> DNA

<213> Homo sapiens

<400> 362

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ggacactatg gggtetggge tgececttgt cetectettg accetecttg 100 gcageteaca tggaacaggg cegggtatga etttgeaact gaagetgaag 150 gagtettte tgacaaatte etectatgag teeagettee tggaattget 200 tgaaaagete tgeeteece teeateteec tteagggace agegteaece 250 teeaceatge aagateteaa eaceatgttg tetgeaacae atgacageca 300 ttgaageetg tgteettett ggeeeggget tttgggeegg ggatgeagga 350 ggeaggeece gaceetgtet tteageagge eeceaecete etgagtgea 400 ataaataaaa tteggtatge tg 422

<210> 363

<211> 78

<212> PRT

<213> Homo sapiens

<400> 363

Met Gly Ser Gly Leu Pro Leu Val Leu Leu Leu Thr Leu Leu Gly 1 5 10 15

Ser Ser His Gly Thr Gly Pro Gly Met Thr Leu Gln Leu Lys Leu 20 25 30

Lys Glu Ser Phe Leu Thr Asn Ser Ser Tyr Glu Ser Ser Phe Leu 35 40 45

Glu Leu Leu Glu Lys Leu Cys Leu Leu Leu His Leu Pro Ser Gly 50 55 60

Thr Ser Val Thr Leu His His Ala Arg Ser Gln His His Val Val
65 70 75

Cys Asn Thr

<210> 364

<211> 826

<212> DNA

<213> Homo sapiens

<400> 364

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<210> 365

<211> 67

<212> PRT

<213> Homo sapiens

<400> 365

Met Ile Gly Tyr Tyr Leu Ile Leu Phe Leu Met Trp Gly Ser Ser

Thr Val Phe Cys Val Leu Leu Ile Phe Thr Ile Ala Glu Ala Ser 20 25

Phe Ser Val Glu Asn Glu Cys Leu Val Asp Leu Cys Leu Leu Arg

Ile Cys Tyr Lys Leu Ser Gly Val Pro Asn Gln Cys Arg Val Pro

Leu Pro Ser Asp Cys Ser Lys

<210> 366

<211> 2475

<212> DNA

<213> Homo sapiens

<400> 366

gaggatttgc cacagcagcg gatagagcag gagagcacca ccggagccct 50 tgagacatcc ttgagaagag ccacagcata agagactgcc ctgcttggtg 100 ttttgcagga tgatggtggc ccttcgagga gcttctgcat tgctggttct 150 gttccttgca gcttttctgc ccccgccgca gtgtacccag gacccagcca 200 tggtgcatta catctaccag cgctttcgag tcttggagca agggctggaa 250 aaatgtaccc aagcaacgag ggcatacatt caagaattcc aagagttctc 300 aaaaaatata totgtoatgo tgggaagatg toagacotac acaagtgagt 350 acaagagtgc agtgggtaac ttggcactga gagttgaacg tgcccaacgg 400 gagattgact acatacaata ccttcgagag gctgacgagt gcatcgtatc 450 agaggacaag acactggcag aaatgttgct ccaagaagct gaagaagaga 500

aaaagatccg gactctgctg aatgcaagct gtgacaacat gctgatgggc 550 ataaagtett tgaaaatagt gaagaagatg atggacacae atggetettg 600 gatgaaagat gctgtctata actctccaaa ggtgtactta ttaattggat 650 ccagaaacaa cactgtttgg gaatttgcaa acatacgggc attcatggag 700 gataacacca agccagctcc ccggaagcaa atcctaacac tttcctggca 750 gggaacaggc caagtgatct acaaaggttt tctatttttt cataaccaag 800 caacttctaa tgagataatc aaatataacc tgcagaagag gactgtggaa 850 gatcgaatgc tgctcccagg aggggtaggc cgagcattgg tttaccagca 900 ctccccctca acttacattg acctggctgt ggatgagcat gggctctggg 950 ccatccactc tgggccaggc acccatagcc atttggttct cacaaagatt 1000 gageegggea caetgggagt ggageattea tgggatacee catgeagaag 1050 ccaggatget gaageeteat teetettgtg tggggttete tatgtggtet 1100 acagtactgg gggccagggc cctcatcgca tcacctgcat ctatgatcca 1150 ctgggcacta tcagtgagga ggacttgccc aacttgttct tccccaagag 1200 accaagaagt cactccatga tccattacaa ccccagagat aagcagctct 1250 atgcctggaa tgaaggaaac cagatcattt acaaactcca gacaaagaga 1300 aagctgcctc tgaagtaatg cattacagct gtgagaaaga gcactgtggc 1350 tttggcaget gttctacagg acagtgagge tatageceet tcacaatata 1400 gtatccctct aatcacaca aggaagagtg tgtagaagtg gaaatacgta 1450 tgcctccttt cccaaatgtc actgccttag gtatcttcca agagcttaga 1500 tgagagcata tcatcaggaa agtttcaaca atgtccatta ctcccccaaa 1550 cctcctggct ctcaaggatg accacattct gatacagcct acttcaagcc 1600 ttttgtttta ctgctcccca gcatttactg taactctgcc atcttccctc 1650 ccacaattag agttgtatgc cagcccctaa tattcaccac tggcttttct 1700 ctcccctggc ctttgctgaa gctcttccct ctttttcaaa tgtctattga 1750 tattctccca ttttcactgc ccaactaaaa tactattaat atttctttct 1800 tttcttttct tttttttgag acaaggtctc actatgttgc ccaggctggt 1850 ctcaaactcc agagctcaag agatcctcct gcctcagcct cctaagtacc 1900 tgggattaca ggcatgtgcc accacacctg gcttaaaata ctatttctta 1950 ttgaggttta acctetattt cecetageee tgteetteea etaagettgg 2000 tagatgtaat aataaagtga aaatattaac atttgaatat cgctttccag 2050 gtgtggagtg tttgcacatc attgaattct cgtttcacct ttgtgaaaca 2100

tgcacaagtc tttacagctg tcattctaga gtttaggtga gtaacacaat 2150 tacaaagtga aagatacagc tagaaaatac tacaaatccc atagttttc 2200 cattgcccaa ggaagcatca aatacgtatg tttgttcacc tactcttata 2250 gtcaatgcgt tcatcgtttc agcctaaaaa taatagtctg tccctttagc 2300 cagttttcat gtctgcacaa gacctttcaa taggcctttc aaatgataat 2350 tcctccagaa aaccagtcta agggtgagga ccccaactct agcctcctct 2400 tgtcttgctg tcctctgttt ctctctttct gctttaaatt caataaaagt 2450 gacactgagc aaaaaaaaaa aaaaa 2475

<210> 367 <211> 402

<212> PRT

<213> Homo sapiens

<400> 367

Met Met Val Ala Leu Arg Gly Ala Ser Ala Leu Leu Val Leu Phe
1 5 10 15

Leu Ala Ala Phe Leu Pro Pro Gln Cys Thr Gln Asp Pro Ala

Met Val His Tyr Ile Tyr Gln Arg Phe Arg Val Leu Glu Gln Gly

Leu Glu Lys Cys Thr Gln Ala Thr Arg Ala Tyr Ile Gln Glu Phe 50 60

Gln Glu Phe Ser Lys Asn Ile Ser Val Met Leu Gly Arg Cys Gln
65 70 75

Thr Tyr Thr Ser Glu Tyr Lys Ser Ala Val Gly Asn Leu Ala Leu 80 85 90

Arg Val Glu Arg Ala Gln Arg Glu Ile Asp Tyr Ile Gln Tyr Leu 95 100 105

Arg Glu Ala Asp Glu Cys Ile Val Ser Glu Asp Lys Thr Leu Ala 110 115 120

Glu Met Leu Gln Glu Ala Glu Glu Glu Lys Lys Ile Arg Thr 125 130 135

Leu Leu Asn Ala Ser Cys Asp Asn Met Leu Met Gly Ile Lys Ser 140 145

Leu Lys Ile Val Lys Lys Met Met Asp Thr His Gly Ser Trp Met 155 160 165

Lys Asp Ala Val Tyr Asn Ser Pro Lys Val Tyr Leu Leu Ile Gly 170 175

Ser Arg Asn Asn Thr Val Trp Glu Phe Ala Asn Ile Arg Ala Phe 185 190

Met Glu Asp Asn Thr Lys Pro Ala Pro Arg Lys Gln Ile Leu Thr 200 205 210

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Leu Ser Trp Gln Gly Thr Gly Gln Val Ile Tyr Lys Gly Phe Leu
                215
                                     220
Phe Phe His Asn Gln Ala Thr Ser Asn Glu Ile Ile Lys Tyr Asn
                                     235
Leu Gln Lys Arg Thr Val Glu Asp Arg Met Leu Leu Pro Gly Gly
Val Gly Arg Ala Leu Val Tyr Gln His Ser Pro Ser Thr Tyr Ile
                260
                                     265
Asp Leu Ala Val Asp Glu His Gly Leu Trp Ala Ile His Ser Gly
                275
                                     280
                                                          285
Pro Gly Thr His Ser His Leu Val Leu Thr Lys Ile Glu Pro Gly
                290
                                     295
Thr Leu Gly Val Glu His Ser Trp Asp Thr Pro Cys Arg Ser Gln
                305
                                     310
Asp Ala Glu Ala Ser Phe Leu Leu Cys Gly Val Leu Tyr Val Val
                                     325
Tyr Ser Thr Gly Gly Gln Gly Pro His Arg Ile Thr Cys Ile Tyr
                33<del>5</del>
Asp Pro Leu Gly Thr Ile Ser Glu Glu Asp Leu Pro Asn Leu Phe
                350
                                     355
                                                          360
Phe Pro Lys Arg Pro Arg Ser His Ser Met Ile His Tyr Asn Pro
                                     370
Arg Asp Lys Gln Leu Tyr Ala Trp Asn Glu Gly Asn Gln Ile Ile
Tyr Lys Leu Gln Thr Lys Arg Lys Leu Pro Leu Lys
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<210> 368

<211> 2281

<212> DNA

<213> Homo sapiens

<400> 368

aggregecege gtacteacta getgaggtgg cagtggttee accaacatgg 50 agctetegea gatgteggag etcatgggge tgteggtgtt gettgggetg 100 etggeectga tggegaegge ggeggtageg egggggtgge tgegegeggg 150 ggaggagagg ageggeegge eegeetgeea aaaageaaat ggattteeac 200 etgacaaate ttegggatee aagaageaga aacaatatea geggattegg 250 aaggagaage etcaacaaca caactteace eacegeetee tggetgeage 300 tetgaagage cacagegga acatatettg eatggaett ageageaatg 350 geaaatacet ggetaectgt geagatgate geaceateeg eatetggage 400 accaaggaet teetgeageg agageaeege ageatgagag eeaacgtgga 450

gctggaccac gccaccctgg tgcgcttcag ccctgactgc agagccttca 500 tcgtctggct ggccaacggg gacaccctcc gtgtcttcaa gatgaccaag 550 cgggaggatg ggggctacac cttcacagcc accccagagg acttccctaa 600 aaagcacaag gcgcctgtca tcgacattgg cattgctaac acagggaagt 650 ttatcatgac tgcctccagt gacaccactg tcctcatctg gagcctgaag 700 ggtcaagtgc tgtctaccat caacaccaac cagatgaaca acacacacgc 750 tgctgtatct ccctgtggca gatttgtagc ctcgtgtggc ttcaccccag 800 atgtgaaggt ttgggaagtc tgctttggaa agaaggggga gttccaggag 850 gtggtgcgag ccttcgaact aaagggccac tccgcggctg tgcactcgtt 900 tgctttctcc aacgactcac ggaggatggc ttctgtctcc aaggatggta 950 catggaaact gtgggacaca gatgtggaat acaagaagaa gcaggacccc 1000 tacttgctga agacaggccg ctttgaagag gcggcgggtg ccgcgccgtg 1050 ccgcctggcc ctctcccca acgcccaggt cttggccttg gccagtggca 1100 gtagtattca tctctacaat acccggcggg gcgagaagga ggagtgcttt 1150 gagcgggtcc atggcgagtg tatcgccaac ttgtcctttg acatcactgg 1200 cegetttctg gcctcctgtg gggaccgggc ggtgcggctg tttcacaaca 1250 ctcctggcca ccgagccatg gtggaggaga tgcagggcca cctgaagcgg 1300 gcctccaacg agagcacccg ccagaggctg cagcagcagc tgacccaggc 1350 ccaagagacc ctgaagagcc tgggtgccct gaagaagtga ctctgggagg 1400 geceggegea gaggattgag gaggagggat etggeeteet eatggeactg 1450 ctgccatctt tecteccagg tggaageett teagaaggag teteetggtt 1500 ttcttactgg tggccctgct tcttcccatt gaaactactc ttgtctactt 1550 aggtetetet ettettgetg getgtgaete etceetgaet agtggeeaag 1600 gtgcttttct tcctcccagg cccagtgggt ggaatctgtc cccacctggc 1650 tggccttgtg gcagcacatc ctcacaccca aagaagtttg taaatgttcc 1750 agaacaacct agagaacacc tgagtactaa gcagcagttt tgcaaggatg 1800 ggagactggg atagcttccc atcacagaac tgtgttccat caaaaagaca 1850 ctaagggatt teettetggg ceteagttet atttgtaaga tggagaataa 1900 tcctctctgt gaactccttg caaagatgat atgaggctaa gagaatatca 1950 agtccccagg tctggaagaa aagtagaaaa gagtagtact attgtccaat 2000 gtcatgaaag tggtaaaagt gggaaccagt gtgctttgaa accaaattag 2050

<210> 369

<211> 447

<212> PRT

<213> Homo sapiens

<400> 369

Met Glu Leu Ser Gln Met Ser Glu Leu Met Gly Leu Ser Val Leu  $1 \hspace{1cm} 5 \hspace{1cm} 10 \hspace{1cm} 15$ 

Leu Gly Leu Leu Ala Leu Met Ala Thr Ala Ala Val Ala Arg Gly
20 25 30

Trp Leu Arg Ala Gly Glu Glu Arg Ser Gly Arg Pro Ala Cys Gln
35 40 45

Lys Ala Asn Gly Phe Pro Pro Asp Lys Ser Ser Gly Ser Lys 50 55 60

Gln Lys Gln Tyr Gln Arg Ile Arg Lys Glu Lys Pro Gln Gln His 65 70 75

Asn Phe Thr His Arg Leu Leu Ala Ala Leu Lys Ser His Ser 80 85 90

Gly Asn Ile Ser Cys Met Asp Phe Ser Ser Asn Gly Lys Tyr Leu 95 100 105

Ala Thr Cys Ala Asp Asp Arg Thr Ile Arg Ile Trp Ser Thr Lys 110 115 120

Asp Phe Leu Gln Arg Glu His Arg Ser Met Arg Ala Asn Val Glu 125 130 135

Leu Asp His Ala Thr Leu Val Arg Phe Ser Pro Asp Cys Arg Ala 140 145 150

Phe Ile Val Trp Leu Ala Asn Gly Asp Thr Leu Arg Val Phe Lys 155 160 165

Met Thr Lys Arg Glu Asp Gly Gly Tyr Thr Phe Thr Ala Thr Pro 170 175 180

Glu Asp Phe Pro Lys Lys His Lys Ala Pro Val Ile Asp Ile Gly 185 190

Ile Ala Asn Thr Gly Lys Phe Ile Met Thr Ala Ser Ser Asp Thr  $200 \\ \hspace{1.5cm} 205 \\ \hspace{1.5cm} 210$ 

Thr Val Leu Ile Trp Ser Leu Lys Gly Gln Val Leu Ser Thr Ile 215 220 220

Asn Thr Asn Gln Met Asn Asn Thr His Ala Ala Val Ser Pro Cys 230 235 240

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Gly Arg Phe Val Ala Ser Cys Gly Phe Thr Pro Asp Val Lys Val
Trp Glu Val Cys Phe Gly Lys Lys Gly Glu Phe Gln Glu Val Val
                 260
Arg Ala Phe Glu Leu Lys Gly His Ser Ala Ala Val His Ser Phe
                                     280
Ala Phe Ser Asn Asp Ser Arg Arg Met Ala Ser Val Ser Lys Asp
                 290
                                     295
                                                         300
Gly Thr Trp Lys Leu Trp Asp Thr Asp Val Glu Tyr Lys Lys
                 305
                                     310
                                                         315
Gln Asp Pro Tyr Leu Leu Lys Thr Gly Arg Phe Glu Glu Ala Ala
                 320
Gly Ala Ala Pro Cys Arg Leu Ala Leu Ser Pro Asn Ala Gln Val
                                     340
Leu Ala Leu Ala Ser Gly Ser Ser Ile His Leu Tyr Asn Thr Arg
                                                         360
Arg Gly Glu Lys Glu Glu Cys Phe Glu Arg Val His Gly Glu Cys
                365
Ile Ala Asn Leu Ser Phe Asp Ile Thr Gly Arg Phe Leu Ala Ser
                380
                                     385
Cys Gly Asp Arg Ala Val Arg Leu Phe His Asn Thr Pro Gly His
                395
Arg Ala Met Val Glu Glu Met Gln Gly His Leu Lys Arg Ala Ser
                410
                                     415
Asn Glu Ser Thr Arg Gln Arg Leu Gln Gln Gln Leu Thr Gln Ala
                                    430
Gln Glu Thr Leu Lys Ser Leu Gly Ala Leu Lys Lys
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<210> 370

<211> 1415

<212> DNA

<213> Homo sapiens

440

<400> 370

tggcctccc agcttgcag gcacaaggct gagcggagg aagcgagagg 50 catctaagca ggcagtgttt tgccttcacc ccaagtgacc atgagaggtg 100 ccacgcgagt ctcaatcatg ctcctcag taactgtgtc tgactgtgct 150 gtgatcacag gggcctgtga gcgggatgtc cagtgtgggg caggcacctg 200 ctgtgccatc agcctgtggc ttcgagggct gcggatgtgc accccgctgg 250 ggcgggaagg cgaggatgc caccccggca gccacaaggt ccccttcttc 300 aggaaacgca agcacacac ctgtccttgc ttgcccaacc tgctgtgctc 350 caggttcccg gacggcaggt accgctgct catggacttg aagaacatca 400

atttttagge gettgeetgg teteaggata eccaccatee tttteetgag 450 cacagootgg attittatti etgocatgaa acccagotee catgaetete 500 ccaqtcccta cactgactac cctgatctct cttgtctagt acgcacatat 550 gcacacaggc agacatacct cccatcatga catggtcccc aggctggcct 600 gaggatgtca cagcttgagg ctgtggtgtg aaaggtggcc agcctggttc 650 tetteeetge teaggetgee agagaggtgg taaatggeag aaaggacatt 700 cececteece tecceaggtg acetgetete ttteetggge cetgeecete 750 tececacatq tatecetegq tetgaattaq acatteetqq qeacaggete 800 ttgggtgcat tgctcagagt cccaggtcct ggcctgaccc tcaggccctt 850 cacgtgaggt ctgtgaggac caatttgtgg gtagttcatc ttccctcgat 900 tggttaactc cttagtttca gaccacagac tcaagattgg ctcttcccag 950 agggcagcag acagtcaccc caaggcaggt gtagggagcc cagggaggcc 1000 aatcaqcccc ctqaaqactc tggtcccaqt caqcctqtqg cttqtggcct 1050 gtgacctgtg accttctgcc agaattgtca tgcctctgag gccccctctt 1100 accacacttt accagttaac cactgaagcc cccaattccc acagcttttc 1150 cattaaaatg caaatggtgg tggttcaatc taatctgata ttgacatatt 1200 agaaggcaat tagggtgttt cettaaacaa eteettteea aggateagee 1250 ctgagagcag gttggtgact ttgaggaggg cagtcctctg tccagattgg 1300 ggtgggagca agggacaggg agcagggcag gggctgaaag gggcactgat 1350 tcagaccagg gaggcaacta cacaccaaca tgctggcttt agaataaaag 1400

<210> 371 <211> 105 <212> PRT

<213> Homo sapiens

caccaactga aaaaa 1415

<400> 371

Met Arg Gly Ala Thr Arg Val Ser Ile Met Leu Leu Leu Val Thr 1 5 10 15

Val Ser Asp Cys Ala Val Ile Thr Gly Ala Cys Glu Arg Asp Val 20 25 30

Gln Cys Gly Ala Gly Thr Cys Cys Ala Ile Ser Leu Trp Leu Arg 35 40 45

Gly Leu Arg Met Cys Thr Pro Leu Gly Arg Glu Gly Glu Glu Cys
50 55 60

His Pro Gly Ser His Lys Val Pro Phe Phe Arg Lys Arg Lys His 65 70 75

His Thr Cys Pro Cys Leu Pro Asn Leu Leu Cys Ser Arg Phe Pro 80 85 90

Asp Gly Arg Tyr Arg Cys Ser Met Asp Leu Lys Asn Ile Asn Phe 95 100 105

- <210> 372
- <211> 1281
- <212> DNA
- <213> Homo sapiens
- <400> 372

agcgcccggg cgtcggggcg gtaaaaggcc ggcagaaggg aggcacttga 50 gaaatgtctt tcctccagga cccaagtttc ttcaccatgg ggatgtggtc 100 cattggtgca ggagccctgg gggctgctgc cttggcattg ctgcttgcca 150 acacagacgt gtttctgtcc aagccccaga aagcggccct ggagtacctg 200 gaggatatag acctgaaaac actggagaag gaaccaagga ctttcaaagc 250 aaaggagcta tgggaaaaaa atggagctgt gattatggcc gtgcggaggc 300 caggetgttt cetetgtega gaggaagetg eggatetgte etecetgaaa 350 agcatgttgg accagetggg cgteceette tatgcagtgg taaaggagea 400 catcaggact gaagtgaagg atttccagcc ttatttcaaa ggagaaatct 450 tcctggatga aaagaaaaag ttctatggtc cacaaaggcg gaagatgatg 500 tttatgggat ttatccgtct gggagtgtgg tacaacttct tccgagcctg 550 gaacggaggc ttctctggaa acctggaagg agaaggcttc atccttgggg 600 gagttttcgt ggtgggatca ggaaagcagg gcattcttct tgagcaccga 650 gaaaaagaat ttggagacaa agtaaaccta ctttctgttc tggaagctgc 700 taagatgatc aaaccacaga ctttggcctc agagaaaaaa tgattgtgtg 750 aaactgccca gctcagggat aaccagggac attcacctgt gttcatggga 800 tgtattgttt ccactcgtgt ccctaaggag tgagaaaccc atttatactc 850 tactctcagt atggattatt aatgtatttt aatattctgt ttaggcccac 900 taaggcaaaa tagccccaaa acaagactga caaaaatctg aaaaactaat 950 gaggattatt aagctaaaac ctgggaaata ggaggcttaa aattgactgc 1000 caggetgggt gcagtggctc acacetgtaa teecagcaet ttgggaggee 1050 aaggtgagca agtcacttga ggtcgggagt tcgagaccag cctgagcaac 1100 atggcgaaac cccgtctcta ctaaaaatac aaaaatcacc cgggtgtggt 1150 ggcaggcacc tgtagtccca gctacccggg aggctgaggc aggagaatca 1200 cttgaacctg ggaggtggag gttgcggtga gctgagatca caccactgta 1250 ttccagcctg ggtgactgag actctaacta a 1281

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<210> 373
<211> 229
<212> PRT
<213> Homo sapiens
<400> 373
Met Ser Phe Leu Gln Asp Pro Ser Phe Phe Thr Met Gly Met Trp
 Ser Ile Gly Ala Gly Ala Leu Gly Ala Ala Leu Ala Leu Leu
 Leu Ala Asn Thr Asp Val Phe Leu Ser Lys Pro Gln Lys Ala Ala
                  35
 Leu Glu Tyr Leu Glu Asp Ile Asp Leu Lys Thr Leu Glu Lys Glu
 Pro Arg Thr Phe Lys Ala Lys Glu Leu Trp Glu Lys Asn Gly Ala
 Val Ile Met Ala Val Arg Arg Pro Gly Cys Phe Leu Cys Arg Glu
 Glu Ala Ala Asp Leu Ser Ser Leu Lys Ser Met Leu Asp Gln Leu
 Gly Val Pro Leu Tyr Ala Val Val Lys Glu His Ile Arg Thr Glu
                 110
                                     115
                                                         120
 Val Lys Asp Phe Gln Pro Tyr Phe Lys Gly Glu Ile Phe Leu Asp
 Glu Lys Lys Phe Tyr Gly Pro Gln Arg Arg Lys Met Met Phe
                 140
 Met Gly Phe Ile Arg Leu Gly Val Trp Tyr Asn Phe Phe Arg Ala
                 155
 Trp Asn Gly Gly Phe Ser Gly Asn Leu Glu Gly Glu Gly Phe Ile
 Leu Gly Gly Val Phe Val Val Gly Ser Gly Lys Gln Gly Ile Leu
                 185
                                     190
 Leu Glu His Arg Glu Lys Glu Phe Gly Asp Lys Val Asn Leu Leu
                 200
                                     205
 Ser Val Leu Glu Ala Ala Lys Met Ile Lys Pro Gln Thr Leu Ala
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Ser Glu Lys Lys

<210> 374

<211> 744

<212> DNA

<213> Homo sapiens

<400> 374

acggaccgag ggttcgaggg agggacacgg accaggaacc tgagctaggt 50 caaagacgcc cgggccaggt gccccgtcgc aggtgcccct ggccggagat 100

<210> 375

<211> 123

<212> PRT

<213> Homo sapiens

<400> 375

Met Ala Asn Pro Gly Leu Gly Leu Leu Leu Ala Leu Gly Leu Pro 1 10 15

Phe Leu Leu Ala Arg Trp Gly Arg Ala Trp Gly Gln Ile Gln Thr 20 25 30

Thr Ser Ala Asn Glu Asn Ser Thr Val Leu Pro Ser Ser Thr Ser 35 40 45

Ser Ser Ser Asp Gly Asn Leu Arg Pro Glu Ala Ile Thr Ala Ile
50 55 60

Ile Val Val Phe Ser Leu Leu Ala Ala Leu Leu Leu Ala Val Gly
65 70 75

Leu Ala Leu Leu Val Arg Lys Leu Arg Glu Lys Arg Gln Thr Glu 80 85 90

Gly Thr Tyr Arg Pro Ser Ser Glu Glu Gln Phe Ser His Ala Ala 95 100 105

Glu Ala Arg Ala Pro Gln Asp Ser Lys Glu Thr Val Gln Gly Cys 110 115 120

Leu Pro Ile

<210> 376

<211> 713

<212> DNA

<213> Homo sapiens

<400> 376 aatatatcat ctatttatca ttaatcaata atgtattctt ttattccaat 50 aacatttggg ttttgggatt ttaattttca aacacagcag aatgacattt 100 tttctgtcac tattattatt gttggtatgt gaagctattt ggagatccaa 150 ttcaggaagc aacacattgg agaatggcta ctttctatca agaaataaag 200 agaaccacag tcaacccaca caatcatctt tagaagacag tgtgactcct 250 accaaagetg tcaaaaccac aggcaagggc atagttaaag gacggaatet 300 tgactcaaga gggttaattc ttggtgctga agcctggggc aggggtgtaa 350 agaaaaacac ttagattcaa tgattgtaaa tttaaggcaa atacacatat 400 tagtattacc ttagtgtaat gtatccctgt catatataca ataaggtgaa 450 attataagta ccctatgcag ttggctggac agttctaaat tggactttat 500 taatttttaa aatcagtaac tgatttatca ctggctatgt gcttagatct 550 acaggagatc atataatttg atacaaataa aagaaaagtg ttctctcccc 600 ttacagaatt gacattttaa atgcgataca gttagaatag gaaatatgac 650 attagaaagg aagaatgaca gggagaaagg aaagaaggga aaatgttgcc 700 aaggaaaaaa aaa 713 <210> 377 <211> 90 <212> PRT <213> Homo sapiens <400> 377 Met Thr Phe Phe Leu Ser Leu Leu Leu Leu Val Cys Glu Ala Ile Trp Arg Ser Asn Ser Gly Ser Asn Thr Leu Glu Asn Gly Tyr Phe Leu Ser Arg Asn Lys Glu Asn His Ser Gln Pro Thr Gln Ser

Ser Leu Glu Asp Ser Val Thr Pro Thr Lys Ala Val Lys Thr Thr 50 55 60

Gly Lys Gly Ile Val Lys Gly Arg Asn Leu Asp Ser Arg Gly Leu
65 70 75

Ile Leu Gly Ala Glu Ala Trp Gly Arg Gly Val Lys Lys Asn Thr  $80 \\ 85 \\ 90$ 

<sup>&</sup>lt;210> 378

<sup>&</sup>lt;211> 3265

<sup>&</sup>lt;212> DNA

<sup>&</sup>lt;213> Homo sapiens

<sup>&</sup>lt;400> 378

cctcttagtt ctgtgcctgc tgcaccagtc aaatacttcc ttcattaagc 100 tgaataataa tggctttgaa gatattgtca ttgttataga tcctagtgtg 150 ccagaagatg aaaaaataat tgaacaaata gaggatatgg tgactacagc 200 ttctacgtac ctgtttgaag ccacagaaaa aagatttttt ttcaaaaatg 250 tatctatatt aattcctqaq aattqqaaqq aaaatcctca qtacaaaaqq 300 ccaaaacatg aaaaccataa acatgctgat gttatagttg caccacctac 350 actcccaggt agagatgaac catacaccaa gcagttcaca gaatgtggag 400 agaaaggega atacattcac ttcacccctg accttctact tggaaaaaaa 450 caaaatgaat atggaccacc aggcaaactg tttgtccatg agtgggctca 500 cctccggtgg ggagtgtttg atgagtacaa tgaagatcag cctttctacc 550 gtgctaagtc aaaaaaaatc gaagcaacaa ggtgttccgc aggtatctct 600 ggtagaaata gagtttataa gtgtcaagga ggcagctgtc ttagtagagc 650 atgcagaatt gattctacaa caaaactgta tggaaaagat tgtcaattct 700 ttcctgataa agtacaaaca gaaaaagcat ccataatgtt tatgcaaagt 750 attgattctg ttgttgaatt ttgtaacgaa aaaacccata atcaagaagc 800 tccaagccta caaaacataa agtgcaattt tagaagtaca tgggaggtga 850 ttagcaattc tgaggatttt aaaaacacca tacccatggt gacaccacct 900 cctccacctg tcttctcatt gctgaagatc agtcaaagaa ttgtgtgctt 950 agttettgat aagtetggaa geatgggggg taaggaeege etaaategaa 1000 tgaatcaagc agcaaaacat ttcctgctgc agactgttga aaatggatcc 1050 tgggtgggga tggttcactt tgatagtact gccactattg taaataagct 1100 aatccaaata aaaaqcaqtq atqaaaqaaa cacactcatq qcaqqattac 1150 ctacatatcc tctgggagga acttccatct gctctggaat taaatatgca 1200 tttcaggtga ttggagagct acattcccaa ctcgatggat ccgaagtact 1250 gctgctgact gatggggagg ataacactgc aagttcttgt attgatgaag 1300 tgaaacaaag tggggccatt gttcatttta ttgctttggg aagagctgct 1350 gatgaagcag taatagagat gagcaagata acaggaggaa gtcatttta 1400 tgtttcagat gaagctcaga acaatggcct cattgatgct tttggggctc 1450 ttacatcagg aaatactgat ctctcccaga agtcccttca gctcgaaagt 1500 aagggattaa cactgaatag taatgcctgg atgaacgaca ctgtcataat 1550 tgatagtaca gtgggaaagg acacgttctt tctcatcaca tggaacagtc 1600 tgcctcccag tatttctctc tgggatccca gtggaacaat aatggaaaat 1650

ttcacagtgg atgcaacttc caaaatggcc tatctcagta ttccaggaac 1700 tgcaaaggtg ggcacttggg catacaatct tcaagccaaa gcgaacccag 1750 aaacattaac tattacagta acttctcgag cagcaaattc ttctgtgcct 1800 ccaatcacag tgaatgctaa aatgaataag gacgtaaaca gtttccccag 1850 cccaatgatt gtttacgcag aaattctaca aggatatgta cctgttcttg 1900 gagecaatgt gaetgettte attgaateae agaatggaea tacagaagtt 1950 ttggaacttt tggataatgg tgcaggcgct gattctttca agaatgatgg 2000 agtctactcc aggtatttta cagcatatac agaaaatggc agatatagct 2050 taaaagttcg ggctcatgga ggagcaaaca ctgccaggct aaaattacgg 2100 cctccactga atagagccgc gtacatacca ggctgggtag tgaacgggga 2150 aattgaagca aacccgccaa gacctgaaat tgatgaggat actcagacca 2200 ccttggagga tttcagccga acagcatccg gaggtgcatt tgtggtatca 2250 caagtcccaa gccttccctt gcctgaccaa tacccaccaa gtcaaatcac 2300 agaccttgat gccacagttc atgaggataa gattattctt acatggacag 2350 caccaggaga taattttgat gttggaaaag ttcaacgtta tatcataaga 2400 ataagtgcaa gtattettga tetaagagae agttttgatg atgetettea 2450 agtaaatact actgatetgt caccaaagga ggccaactcc aaggaaagct 2500 ttgcatttaa accagaaaat atctcagaag aaaatgcaac ccacatattt 2550 attgccatta aaagtataga taaaagcaat ttgacatcaa aagtatccaa 2600 cattgcacaa gtaactttgt ttatccctca agcaaatcct gatgacattg 2650 atcctacacc tactcctact cctactccta ctcctgataa aagtcataat 2700 tctggagtta atattctac gctggtattg tctgtgattg ggtctgttgt 2750 aattgttaac tttattttaa gtaccaccat ttgaacctta acgaagaaaa 2800 aaatcttcaa gtagacctag aagagagttt taaaaaacaa aacaatgtaa 2850 gtaaaggata tttctgaatc ttaaaattca tcccatgtgt gatcataaac 2900 tcataaaaat aattttaaga tgtcggaaaa ggatactttg attaaataaa 2950 aacactcatg gatatgtaaa aactgtcaag attaaaattt aatagtttca 3000 tttatttgtt attttatttg taagaaatag tgatgaacaa agatcctttt 3050 tcatactgat acctggttgt atattatttg atgcaacagt tttctgaaat 3100 gatatttcaa attgcatcaa gaaattaaaa tcatctatct gagtagtcaa 3150 

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<210> 379

<211> 919

<212> PRT

<213> Homo sapiens

<400> 379

Met Gly Leu Phe Arg Gly Phe Val Phe Leu Leu Val Leu Cys Leu
1 5 10 15

Leu His Gln Ser Asn Thr Ser Phe Ile Lys Leu Asn Asn Asn Gly
20 25 30

Phe Glu Asp Ile Val Ile Val Ile Asp Pro Ser Val Pro Glu Asp 35 40 45

Glu Lys Ile Ile Glu Gln Ile Glu Asp Met Val Thr Thr Ala Ser
50 55 60

Thr Tyr Leu Phe Glu Ala Thr Glu Lys Arg Phe Phe Phe Lys Asn
65 70 75

Val Ser Ile Leu Ile Pro Glu Asn Trp Lys Glu Asn Pro Gln Tyr 80 85 90

Lys Arg Pro Lys His Glu Asn His Lys His Ala Asp Val Ile Val

Ala Pro Pro Thr Leu Pro Gly Arg Asp Glu Pro Tyr Thr Lys Gln
110 115 120

Phe Thr Glu Cys Gly Glu Lys Gly Glu Tyr Ile His Phe Thr Pro 125 130 135

Asp Leu Leu Gly Lys Lys Gln Asn Glu Tyr Gly Pro Pro Gly 140 145 150

Lys Leu Phe Val His Glu Trp Ala His Leu Arg Trp Gly Val Phe 155 160 165

Asp Glu Tyr Asn Glu Asp Gln Pro Phe Tyr Arg Ala Lys Ser Lys

Lys Ile Glu Ala Thr Arg Cys Ser Ala Gly Ile Ser Gly Arg Asn 185 190 195

Arg Val Tyr Lys Cys Gln Gly Gly Ser Cys Leu Ser Arg Ala Cys 200 205 210

Arg Ile Asp Ser Thr Thr Lys Leu Tyr Gly Lys Asp Cys Gln Phe \$215\$ \$220\$

Phe Pro Asp Lys Val Gln Thr Glu Lys Ala Ser Ile Met Phe Met 230 235

Gln Ser Ile Asp Ser Val Val Glu Phe Cys Asn Glu Lys Thr His
245 250 255

Asn Gln Glu Ala Pro Ser Leu Gln Asn Ile Lys Cys Asn Phe Arg

Ser Thr Trp Glu Val Ile Ser Asn Ser Glu Asp Phe Lys Asn Thr

				215					200					200
Ile	Pro	Met	Val	Thr 290	Pro	Pro	Pro	Pro	Pro 295	Val	Phe	Ser	Leu	Le:
Lys	Ile	Ser	Gln	Arg 305	Ile	Val	Cys	Leu	Val 310	Leu	Asp	Lys	Ser	Gl <sub>3</sub> 315
Ser	Met	Gly	Gly	Lys 320	Asp	Arg	Leu	Asn	Arg 325	Met	Asn	Gln	Ala	Ala 330
Lys	His	Phe	Leu	Leu 335	Gln	Thr	Val	Glu	Asn 340	Gly	Ser	Trp	Val	Gl <sub>3</sub> 345
Met	Val	His	Phe	Asp 350	Ser	Thr	Ala	Thr	Ile 355	Val	Asn	Lys	Leu	I16 360
Gln	Ile	Lys	Ser	Ser 365	Asp	Glu	Arg	Asn	Thr 370	Leu	Met	Ala	Gly	Leu 375
Pro	Thr	Tyr	Pro	Leu 380	Gly	Gly	Thr	Ser	Ile 385	Суз	Ser	Gly	Ile	Lуя 390
Tyr	Ala	Phe	Gln	Val 395	Ile	Gly	Glu	Leu	His 400	Ser	Gln	Leu	Asp	Gl <sub>3</sub> 405
Ser	Glu	Val	Leu	Leu 410	Leu	Thr	Asp	Gly	Glu 415	Asp	Asn	Thr	Ala	Sei 420
Ser	Суз	Ile	Asp	Glu 425	Val	Lys	Gln	Ser	Gly 430	Ala	Ile	Val	His	Phe 435
Ile	Ala	Leu	Gly	Arg 440	Ala	Ala	Asp	Glu	Ala 445	Val	Ile	Glu	Met	Se: 450
Lys	Ile	Thr	Gly	Gly 455	Ser	His	Phe	Tyr	Val 460	Ser	Asp	Glu	Ala	Glr 465
Asn	Asn	Gly	Leu	Ile 470	Asp	Ala	Phe	Gly	Ala 475	Leu	Thr	Ser	Gly	Asr 480
Thr	Asp	Leu	Ser	Gln 485	Lys	Ser	Leu	Gln	Leu 490	Glu	Ser	Lys	Gly	Le: 495
Thr	Leu	Asn	Ser	Asn 500	Ala	Trp	Met	Asn	Asp 505	Thr	Val	Ile	Ile	Asp 510
Ser	Thr	Val	Gly	Lys 515	Asp	Thr	Phe	Phe	Leu 520	Ile	Thr	Trp	Asn	Ser 525
Leu	Pro	Pro	Ser	Ile 530	Ser	Leu	Trp	Asp	Pro 535	Ser	Gly	Thr	Ile	Met 540
Glu	Asn	Phe	Thr	Val 545	Asp	Ala	Thr	Ser	Lys 550	Met	Ala	Tyr	Leu	Ser 555
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Ala	Lys	Ala	Asn	Pro 575	Glu	Thr	Leu	Thr	Ile 580	Thr	Val	Thr	Ser	Arc 585
Ala	Ala	Asn	Ser	Ser	Val	Pro	Pro	Ile	Thr	Val	Asn	Ala	Lvs	Met

				590					595					601
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Glu	Ile	Leu	Gln	Gly 620	Tyr	Val	Pro	Val	Leu 625	Gly	Ala	Asn	Val	Th: 630
Ala	Phe	Ile	Glu	Ser 635	Gln	Asn	Gly	His	Thr 640	Glu	Val	Leu	Glu	Let 645
Leu	Asp	Asn	Gly	Ala 650	Gly	Ala	Asp	Ser	Phe 655	Lys	Asn	Asp	Gly	Va]
Tyr	Ser	Arg	Tyr	Phe 665	Thr	Ala	Tyr	Thr	Glu 670	Asn	Gly	Arg	Tyr	Sei 675
Leu	Lys	Val	Arg	Ala 680	His	Gly	Gly	Ala	Asn 685	Thr	Ala	Arg	Leu	Lys 690
Leu	Arg	Pro	Pro	Leu 695	Asn	Arg	Ala	Ala	Tyr 700	Ile	Pro	Gly	Trp	Va] 705
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Glu	Asp	Thr	Gln	Thr 725	Thr	Leu	Glu	Asp	Phe 730	Ser	Arg	Thr	Ala	Se: 735
Gly	Gly	Ala	Phe	Val 740	Val	Ser	Gln	Val	Pro 745	Ser	Leu	Pro	Leu	Pro 750
Asp	Gln	Tyr	Pro	Pro 755	Ser	Gln	Ile	Thr	Asp 760	Leu	Asp	Ala	Thr	Va] 765
His	Glu	Asp	Lys	Ile 770	Ile	Leu	Thr	Trp	Thr 775	Ala	Pro	Gly	Asp	Ası 780
Phe	Asp	Val	Gly	Lys 785	Val	Gln	Arg	Tyr	Ile 790	Ile	Arg	Ile	Ser	Ala 795
Ser	Ile	Leu	Asp	Leu 800	Arg	Asp	Ser	Phe	Asp 805	Asp	Ala	Leu	Gln	Val 810
Asn	Thr	Thr	Asp	Leu 815				Glu			Ser	Lys	Glu	Se:
Phe	Ala	Phe	Lys	Pro 830	Glu	Asn	Ile	Ser	Glu 835	Glu	Asn	Ala	Thr	His 840
Ile	Phe	Ile	Ala	Ile 845	Lys	Ser	Ile	Asp	Lys 850	Ser	Asn	Leu	Thr	Sei 855
Lys	Val	Ser	Asn	Ile 860	Ala	Gln	Val	Thr	Leu 865	Phe	Ile	Pro	Gln	Ala 870
Asn	Pro	Asp	Asp	Ile 875	Asp	Pro	Thr	Pro	Thr 880	Pro	Thr	Pro	Thr	Pro 885
Thr	Pro	Asp	Lys	Ser 890	His	Asn	Ser	Gly	Val 895	Asn	Ile	Ser	Thr	Let 900
Val	Len	Ser	Val	Tle	Glv	Ser	Val	Val	Tle	Va1	Asn	Phe	Tle	T <sub>i</sub> e1

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4. \* 15 H

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Hann Hann 4, #

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ļasis

4 Harry Harry

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<210> 380

<211> 3877 <212> DNA

<213> Homo sapiens

<400> 380

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agttatagtc tgcttattta attaccactt tgcaagcctt acaagagagc 2950 acaagttggc ctacattttt atatttttta agaagatact ttgagatgca 3000 ttatgagaac tttcagttca aagcatcaaa ttgatgccat atccaaggac 3050 atgccaaatg ctgattctgt caggcactga atgtcaggca ttgagacata 3100 gggaaggaat ggtttgtact aatacagacg tacagatact ttctctgaag 3150 agtattttcg aagaggagca actgaacact ggaggaaaag aaaatgacac 3200 tttctgcttt acagaaaagg aaactcattc agactggtga tatcgtgatg 3250 tacctaaaag tcagaaacca cattttctcc tcagaagtag ggaccgcttt 3300 cttacctgtt taaataaacc aaagtatacc gtgtgaacca aacaatctct 3350 tttcaaaaca gggtgctcct cctggcttct ggcttccata agaagaaatg 3400 gagaaaaata tatatata tatatatatt gtgaaagatc aatccatctg 3450 ccagaatcta gtgggatgga agtttttgct acatgttatc caccccaggc 3500 caggtggaag taactgaatt attttttaaa ttaagcagtt ctactcaatc 3550 accaagatgc ttctgaaaat tgcattttat taccatttca aactattttt 3600 taaaaataaa tacagttaac atagagtggt ttcttcattc atgtgaaaat 3650 tattagccag caccagatgc atgagctaat tatctctttg agtccttgct 3700 tctgtttgct cacagtaaac tcattgttta aaagcttcaa gaacattcaa 3750 gctgttggtg tgttaaaaaa tgcattgtat tgatttgtac tggtagttta 3800 tgaaatttaa ttaaaacaca ggccatgaat ggaaggtggt attgcacagc 3850 taataaaata tgatttgtgg atatgaa 3877

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<211> 532

<212> PRT

<213> Homo sapiens

<400> 381

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Met Leu Ala Cys Thr Pro Lys Gly Asp Glu Glu Gln Leu Ala Leu 35 40 45

Pro Arg Ala Asn Ser Pro Thr Gly Lys Glu Gly Tyr Gln Ala Val

Leu Gln Glu Trp Glu Glu Gln His Arg Asn Tyr Val Ser Ser Leu
65 70 75

Lys Arg Gln Ile Ala Gln Leu Lys Glu Glu Leu Gln Glu Arg Ser 80 85 90

Glu	ı Glr	ı Leı	ı Arç	g Ası 99	ı Gly	/ Glr	туг	Glr	n Ala 100		Asp	Ala	a Alá	Gly 105
Leu	ı Gly	/ Leu	ı Asp	2 Arg	g Ser	r Pro	Pro	Glu	Lys 115		Gln	Ala	a Asp	Leu 120
Leu	Ala	a Phe	e Let	1 His	s Ser	Gln	Val	. Asp	Lys 130	Ala	Glu	Val	. Asr	135
Gly	Val	. Lys	Leu	140	Thr	Glu	Туг	Ala	Ala 145	Val	Pro	Ph∈	Asp	Ser 150
Phe	Thr	Leu	Gln	Lys 155	Val	Tyr	Gln	. Leu	Glu 160	Thr	Gly	Leu	Thr	Arg 165
His	Pro	Glu	Glu	Lys 170	Pro	Val	Arg	Lys	Asp 175	Lys	Arg	Asp	Glu	Leu 180
Val	Glu	. Ala	Ile	Glu 185	Ser	Ala	Leu	Glu	Thr 190	Leu	Asn	Asn	Pro	Ala 195
Glu	Asn	Ser	Pro	Asn 200	His	Arg	Pro	Tyr	Thr 205	Ala	Ser	Asp	Phe	Ile 210
Glu	Gly	Ile	Tyr	Arg 215	Thr	Glu	Arg	Asp	Lys 220	Gly	Thr	Leu	Tyr	Glu 225
Leu	Thr	Phe	Lys	Gly 230	Asp	His	Lys	His	Glu 235	Phe	Lys	Arg	Leu	Ile 240
Leu	Phe	Arg	Pro	Phe 245	Ser	Pro	Ile	Met	Lys 250	Val	Lys	Asn	Glu	Lys 255
				260					Val 265					270
				275					Met 280					285
				290					His 295					300
				305					Lys 310					315
				320					Phe 325					330
				335					Leu 340					345
				350					Phe 355					Asp 360
				365					Thr 370					Thr 375
				380					Val 385					390
Asn	Pro	Gly	Ile	Ile 395	Tyr	Gly	His	His	Asp 1	Ala	Val	Pro	Pro	Leu 405

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Glu Gln Gln Leu Val Ile Lys Lys Glu Thr Gly Phe Trp Arg Asp
                 410
 Phe Gly Phe Gly Met Thr Cys Gln Tyr Arg Ser Asp Phe Ile Asn
                 425
                                      430
 Ile Gly Gly Phe Asp Leu Asp Ile Lys Gly Trp Gly Gly Glu Asp
 Val His Leu Tyr Arg Lys Tyr Leu His Ser Asn Leu Ile Val Val
 Arg Thr Pro Val Arg Gly Leu Phe His Leu Trp His Glu Lys Arg
                 470
                                      475
                                                          480
 Cys Met Asp Glu Leu Thr Pro Glu Gln Tyr Lys Met Cys Met Gln
                                      490
 Ser Lys Ala Met Asn Glu Ala Ser His Gly Gln Leu Gly Met Leu
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 Val Phe Arg His Glu Ile Glu Ala His Leu Arg Lys Gln Lys Gln
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 Lys Thr Ser Ser Lys Lys Thr
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<211> 1346
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<213> Homo sapiens
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ctcttcaaag cgatggtagc tttctccatg agaaaagttc ccaacagaga 200
agcaacagaa atttcccatg tcctactttg caatgtaacc cagagggtat 250
cattctggtt tgtggttaca gacccttcaa aaaatcacac ccttcctgct 300
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ttgcaccacc catggaccca tctgtgccca tctggattat tatatttggt 450
gtgatatttt gcatcatcat agttgcaatt gcactactga ttttatcagg 500
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gatcccctgg acatgaaggg gggcatatta atgatgcctt catgacagag 650
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tagtgtataa atgtggtcat gtggtatttg tagttattga tttaagcatt 950
tttagaaata agatcaggca tatgtatata ttttcacact tcaaagacct 1000
aaggaaaaat aaattttcca gtggagaata catataatat ggtgtagaaa 1050
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tggaattact catatacagg gtggaatttt atcctgttat cacaccaaca 1200
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gttgattata tattttctga atatcagccc ctaataggac aattctattt 1250

gttgaccatt tctacaattt gtaaaagtcc aatctgtgct aacttaataa 1300 agtaataatc atctctttt aaaaaaaaaa aaaaaaaaa aaaaaaa 1346

<210> 387

<211> 212

<212> PRT

<213> Homo sapiens

<400> 387

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Ile Arg Thr Ala Leu Gly Asp Lys Ala Tyr Ala Trp Asp Thr Asn 35 40 45

Glu Glu Tyr Leu Phe Lys Ala Met Val Ala Phe Ser Met Arg Lys 50 55 60

Val Pro Asn Arg Glu Ala Thr Glu Ile Ser His Val Leu Leu Cys 65 70 75

Asn Val Thr Gln Arg Val Ser Phe Trp Phe Val Val Thr Asp Pro 80 85 90

Ser Lys Asn His Thr Leu Pro Ala Val Glu Val Gln Ser Ala Ile 95 100 105

Arg Met Asn Lys Asn Arg Ile Asn Asn Ala Phe Phe Leu Asn Asp 110 115 120

Gln Thr Leu Glu Phe Leu Lys Ile Pro Ser Thr Leu Ala Pro Pro 125 130 135

Phe Cys Ile Ile Ile Val Ala Ile Ala Leu Leu Ile Leu Ser Gly
155 160 165

Ile Trp Gln Arg Arg Arg Lys Asn Lys Glu Pro Ser Glu Val Asp 170 175 180

Asp Ala Glu Asp Lys Cys Glu Asn Met Ile Thr Ile Glu Asn Gly 185 190 190

Ile Pro Ser Asp Pro Leu Asp Met Lys Gly Gly Ile Leu Met Met 200 205 210

Pro Ser

<210> 388

<211> 1371

<212> DNA

<213> Homo sapiens

<400> 388

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cttcttctcc ttggcataca gctcacagct ctttggccta tagcagctgt 200
ggaaatttat acctcccggg tgctggaggc tgttaatggg acagatgctc 250
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ttagaagaca cagactaaca attttagatg gaagctgaga tgatttccaa 800
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gtcatacaca gcctcattat taaggtctta tttaatttca gagtgtaaat 1000
tttttcaagt gctcattagg ttttataaac aagaagctac atttttgccc 1050
ttaagacact acttacagtg ttatgacttg tatacacata tattggtatc 1100
aaaggggata aaagccaatt tgtctgttac atttcctttc acgtatttct 1150
tttagcagca cttctgctac taaagttaat gtgtttactc tctttccttc 1200
ccacattete aattaaaagg tgagetaage eteeteggtg tttetgatta 1250
acagtaaatc ctaaattcaa actgttaaat gacattttta tttttatgtc 1300
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<sup>&</sup>lt;212> PRT

<sup>&</sup>lt;213> Homo sapiens

<sup>&</sup>lt;400> 389

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 Lys Cys Thr Phe Ser Ser Phe Ala Pro Val Gly Asp Ala Leu Thr
                  50
 Val Thr Trp Asn Phe Arg Pro Leu Asp Gly Gly Pro Glu Gln Phe
 Val Phe Tyr Tyr His Ile Asp Pro Phe Gln Pro Met Ser Gly Arg
 Phe Lys Asp Arg Val Ser Trp Asp Gly Asn Pro Glu Arg Tyr Asp
 Ala Ser Ile Leu Leu Trp Lys Leu Gln Phe Asp Asp Asn Gly Thr
                                     115
 Tyr Thr Cys Gln Val Lys Asn Pro Pro Asp Val Asp Gly Val Ile
 Gly Glu Ile Arg Leu Ser Val Val His Thr Val Arg Phe Ser Glu
                 140
 Ile His Phe Leu Ala Leu Ala Ile Gly Ser Ala Cys Ala Leu Met
                                     160
 Ile Ile Val Ile Val Val Leu Phe Gln His Tyr Arg Lys
                                     175
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 Leu Glu Asp Thr Asp
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<211> 25

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 atccgacaac agctgctcca gctgacacgt atccagctac tggtcctgct 150
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<213> Homo sapiens
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 Leu Val Ser Ala Gln Asn Pro Thr Thr Ala Ala Pro Ala Asp Thr
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                                                           30
 Tyr Pro Ala Thr Gly Pro Ala Asp Asp Glu Ala Pro Asp Ala Glu
 Thr Thr Ala Ala Ala Thr Thr Ala Thr Thr Ala Ala Pro Thr Thr
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Leu Pro Lys Trp Val Gly Asp Leu Pro Asn Gly Arg Val Cys Pro
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<210> 397
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<213> Artificial Sequence
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<223> Synthetic oligonucleotide probe
<400> 397
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<210> 398
<211> 907
<212> DNA
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gctgaggcag gaaaatcgct tgaacccagg aggcggacgt tgcggtgagc 850
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<210> 399

<211> 120

<212> PRT

<213> Homo sapiens

<400> 399

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Trp Ser Leu Leu Ala Glu Arg Val Ser Trp Val Arg Asp Ala Glu 20 25 30

Asp Ala His Arg Leu Gln Pro Phe Val Thr Glu Arg Thr Leu Gly 35 40 45

Lys Val Gln Arg Trp Ser Gly Val His Thr Gln Thr Gly Gly Arg 50 55 60

Ala Gly Gly Gln Phe Cys Cys Ala Trp Leu Asp Ser Lys Arg
65 70 75

Val Leu Ala Ser Pro Gly Trp Gly Ala Ala Asn Ser Ile Lys Asn 80 85 90

Gln Arg Val Trp Ala Pro Ala Thr Glu Ser Ser Ala Gln Leu Leu 95 100 105

Cys Cys Trp Pro Val Gly Val Ala Arg Gly Gly Ala Leu Cys Gln 110 115 120

<210> 400

<211> 893

<212> DNA

<213> Homo sapiens

<400> 400

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<210> 401 <211> 198 <212> PRT

<213> Homo sapiens

<400> 401

Met Pro Val Pro Ala Leu Cys Leu Leu Trp Ala Leu Ala Met Val 1 5 10 15

Thr Arg Pro Ala Ser Ala Ala Pro Met Gly Gly Pro Glu Leu Ala 20 25 30

Gln His Glu Glu Leu Thr Leu Leu Phe His Gly Thr Leu Gln Leu
35 40 45

Gly Gln Ala Leu Asn Gly Val Tyr Arg Thr Thr Glu Gly Arg Leu
50 55 60

Thr Lys Ala Arg Asn Ser Leu Gly Leu Tyr Gly Arg Thr Ile Glu
65 70 75

Leu Leu Gly Gln Glu Val Ser Arg Gly Arg Asp Ala Ala Gln Glu 80 85 90

Leu Arg Ala Ser Leu Leu Glu Thr Gln Met Glu Glu Asp Ile Leu 95 100 105

Gln Ala Gln Lys Val Leu Arg Asp Ser Val Gln Arg Leu Glu Val 125 130 135

Gln Leu Arg Ser Ala Trp Leu Gly Pro Ala Tyr Arg Glu Phe Glu 140 145 150

Val Leu Lys Ala His Ala Asp Lys Gln Ser His Ile Leu Trp Ala 155 160 165

Leu Thr Gly His Val Gln Arg Gln Arg Glu Met Val Ala Gln 170 175 180

Gln His Arg Leu Arg Gln Ile Gln Glu Arg Leu His Thr Ala Ala

<211> 1915 <212> DNA

<210> 402

<213> Homo sapiens

Henry Arts Arts Arts Art Art

Marie Annie

i.i.

i.

in i 17

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<210> 403

<211> 206

<212> PRT

<213> Homo sapiens

<400> 403

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Val Ile Cys Ile Leu Val Ile Thr Leu Leu Leu Asp Gln Thr Thr 20 25 30

Ser His Thr Ser Arg Leu Lys Ala Arg Lys His Ser Lys Arg Arg
35 40 45

Val Arg Asp Lys Asp Gly Asp Leu Lys Thr Gln Ile Glu Lys Leu
50 55 60

Trp Thr Glu Val Asn Ala Leu Lys Glu Ile Gln Ala Leu Gln Thr 65 70 75

Val Cys Leu Arg Gly Thr Lys Val His Lys Lys Cys Tyr Leu Ala 80 85 90

Ser Glu Gly Leu Lys His Phe His Glu Ala Asn Glu Asp Cys Ile 95 100 105

Ser Lys Gly Gly Ile Leu Val Ile Pro Arg Asn Ser Asp Glu Ile 110  $\phantom{000}$  115  $\phantom{000}$  120

Asn Ala Leu Gln Asp Tyr Gly Lys Arg Ser Leu Pro Gly Val Asn 125 130 135

Asp Phe Trp Leu Gly Ile Asn Asp Met Val Thr Glu Gly Lys Phe 140 145

Val Asp Val Asn Gly Ile Ala Ile Ser Phe Leu Asn Trp Asp Arg

155 160 165 Ala Gln Pro Asn Gly Gly Lys Arg Glu Asn Cys Val Leu Phe Ser 170 175 Gln Ser Ala Gln Gly Lys Trp Ser Asp Glu Ala Cys Arg Ser Ser 185 Lys Arg Tyr Ile Cys Glu Phe Thr Ile Pro Lys 200 205 <210> 404 <211> 25 <212> DNA <213> Artificial Sequence <220> <223> Synthetic oligonucleotide probe <400> 404 cctggttatc cccaggaact ccgac 25 <210> 405 <211> 23 <212> DNA <213> Artificial Sequence <220> <223> Synthetic oligonucleotide probe <400> 405 ctcttgctgc tgcgacaggc ctc 23 <210> 406 <211> 46 <212> DNA <213> Artificial Sequence <220> <223> Synthetic oligonucleotide probe <400> 406 cgccctccaa gactatggta aaaggagcct gccaggtgtc aatgac 46 <210> 407 <211> 570 <212> DNA <213> Homo sapiens <400> 407 gcgaggaccg ggtataagaa gcctcgtggc cttgcccggg cagccgcagg 50 ttccccgcgc gccccgagcc cccgcgccat gaagctcgcc gccctcctgg 100 ggetetgegt ggeeetgtee tgeageteeg etgetgettt ettagtggge 150 teggecaage etgtggecca geetgteget gegetggagt eggeggegga 200 ggccggggcc gggaccctgg ccaaccccct cggcaccctc aacccgctga 250

ageteetget gageageetg ggeateeceg tgaaceacet catagaggge 300 - teecagaagt gtgtggetga getgggteec caggeegtgg gggeegtgaa 350

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<210> 408

<211> 104

<212> PRT

<213> Homo sapiens

<400> 408

Met Lys Leu Ala Ala Leu Leu Gly Leu Cys Val Ala Leu Ser Cys 1 5 10 15

Ser Ser Ala Ala Ala Phe Leu Val Gly Ser Ala Lys Pro Val Ala 20 25 30

Gln Pro Val Ala Ala Leu Glu Ser Ala Ala Glu Ala Gly Ala Gly
35
40

Thr Leu Ala Asn Pro Leu Gly Thr Leu Asn Pro Leu Lys Leu 50 55 60

Leu Ser Ser Leu Gly Ile Pro Val Asn His Leu Ile Glu Gly Ser 65 70 75

Gln Lys Cys Val Ala Glu Leu Gly Pro Gln Ala Val Gly Ala Val 80 85 90

Lys Ala Leu Lys Ala Leu Gly Ala Leu Thr Val Phe Gly 95

<210> 409

<211> 2089

<212> DNA

<213> Homo sapiens

<400> 409

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<210> 410
<211> 444
<212> PRT
<213> Homo sapiens
<400> 410
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 Arg Glu Glu Glu Asp Glu Gln Glu Ala Ser Glu Glu Lys Ala
 Gly Glu Glu Lys Ala Trp Leu Met Ala Ser Arg Gln Gln Leu
 Ala Lys Glu Thr Ser Asn Phe Gly Phe Ser Leu Leu Arg Lys Ile
 Ser Met Arg His Asp Gly Asn Met Val Phe Ser Pro Phe Gly Met
Ser Leu Ala Met Thr Gly Leu Met Leu Gly Ala Thr Gly Pro Thr
                                     115
Glu Thr Gln Ile Lys Arg Gly Leu His Leu Gln Ala Leu Lys Pro
                                     130
Thr Lys Pro Gly Leu Leu Pro Ser Leu Phe Lys Gly Leu Arg Glu
                140
Thr Leu Ser Arg Asn Leu Glu Leu Gly Leu Ser Gln Gly Ser Phe
                                     160
Ala Phe Ile His Lys Asp Phe Asp Val Lys Glu Thr Phe Phe Asn
Leu Ser Lys Arg Tyr Phe Asp Thr Glu Cys Val Pro Met Asn Phe
                185
                                     190
Arg Asn Ala Ser Gln Ala Lys Arg Leu Met Asn His Tyr Ile Asn
                                     205
Lys Glu Thr Arg Gly Lys Ile Pro Lys Leu Phe Asp Glu Ile Asn
Pro Glu Thr Lys Leu Ile Leu Val Asp Tyr Ile Leu Phe Lys Gly
                230
Lys Trp Leu Thr Pro Phe Asp Pro Val Phe Thr Glu Val Asp Thr
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Phe His Leu Asp Lys Tyr Lys Thr Ile Lys Val Pro Met Met Tyr
Gly Ala Gly Lys Phe Ala Ser Thr Phe Asp Lys Asn Phe Arg Cys
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280

285

275

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His Val Leu Lys Leu Pro Tyr Gln Gly Asn Ala Thr Met Leu Val
Val Leu Met Glu Lys Met Gly Asp His Leu Ala Leu Glu Asp Tyr
Leu Thr Thr Asp Leu Val Glu Thr Trp Leu Arg Asn Met Lys Thr
                 320
                                     325
Arg Asn Met Glu Val Phe Phe Pro Lys Phe Lys Leu Asp Gln Lys
                                     340
Tyr Glu Met His Glu Leu Leu Arg Gln Met Gly Ile Arg Arg Ile
                 350
                                     355
                                                          360
Phe Ser Pro Phe Ala Asp Leu Ser Glu Leu Ser Ala Thr Gly Arg
                                     370
Asn Leu Gln Val Ser Arg Val Leu Arg Arg Thr Val Ile Glu Val
                380
                                     385
Asp Glu Arg Gly Thr Glu Ala Val Ala Gly Ile Leu Ser Glu Ile
                                     400
Thr Ala Tyr Ser Met Pro Pro Val Ile Lys Val Asp Arg Pro Phe
His Phe Met Ile Tyr Glu Glu Thr Ser Gly Met Leu Leu Phe Leu
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<210> 411

<211> 636

<212> DNA

<400> 411

<213> Homo sapiens

440

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gtcaaacact ggccctcaga gcaggaccca gagaaggcct ggggcgcccg 200
tgtggtgag cctccggaga aggacgacca gctggtggtg ctgttccctg 250
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aggggcccca tccttccagg caccaaggcc tggatggaga ccgaggacac 350
cctgggccgt gtcctgagtc ccgagcccga ccatgacagc ctgtaccacc 400
ctccgcctga ggaggaccag ggcgaggaga ggccccggtt gtggtgatg 450
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ggcccaggct gttgggactg ggaccctccc taccctgccc cagctagaca 600

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<210> 412
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<211> 151

<212> PRT

<213> Homo sapiens

<400> 412

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Gln Val Lys His Trp Pro Ser Glu Gln Asp Pro Glu Lys Ala Trp
35 40 45

Gly Ala Arg Val Val Glu Pro Pro Glu Lys Asp Asp Gln Leu Val
50 55 60

Val Leu Phe Pro Val Gln Lys Pro Lys Leu Leu Thr Thr Glu Glu 65 70 75

Lys Pro Arg Gly Gln Gly Arg Gly Pro Ile Leu Pro Gly Thr Lys 80 85 90

Ala Trp Met Glu Thr Glu Asp Thr Leu Gly Arg Val Leu Ser Pro 95 100 105

Glu Pro Asp His Asp Ser Leu Tyr His Pro Pro Pro Glu Glu Asp 110 115 120

Gln Gly Glu Glu Arg Pro Arg Leu Trp Val Met Pro Asn His Gln 125 130 135

Val Leu Leu Gly Pro Glu Glu Asp Gln Asp His Ile Tyr His Pro 140 145 150

Gln

<210> 413

<211> 1176

<212> DNA

<213> Homo sapiens

<400> 413

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tggagtacag atgaggctaa tacttacttc aaggaatgga cctgttcttc 200
gtctccatct ctgcccagaa gctgcaagga aatcaaagac gaatgtccta 250
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<210> 414

<211> 313

<212> PRT

<213> Homo sapiens

<400> 414

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Gly Trp Ser Thr Asp Glu Ala Asn Thr Tyr Phe Lys Glu Trp Thr 20 25 30

Cys Ser Ser Ser Pro Ser Leu Pro Arg Ser Cys Lys Glu Ile Lys 35 40 45

Asp Glu Cys Pro Ser Ala Phe Asp Gly Leu Tyr Phe Leu Arg Thr 50 55 60

Glu Asn Gly Val Ile Tyr Gln Thr Phe Cys Asp Met Thr Ser Gly 65 70 75

Gly Gly Gly Trp Thr Leu Val Ala Ser Val His Glu Asn Asp Met 80 85 90

Arg Gly Lys Cys Thr Val Gly Asp Arg Trp Ser Ser Gln Gln Gly 95 100 105

Ser Lys Ala Asp Tyr Pro Glu Gly Asp Gly Asn Trp Ala Asn Tyr 110 115 120

Asn Thr Phe Gly Ser Ala Glu Ala Ala Thr Ser Asp Asp Tyr Lys

125 130 135 Asn Pro Gly Tyr Tyr Asp Ile Gln Ala Lys Asp Leu Gly Ile Trp 140 145 His Val Pro Asn Lys Ser Pro Met Gln His Trp Arg Asn Ser Ser 155 Leu Leu Arg Tyr Arg Thr Asp Thr Gly Phe Leu Gln Thr Leu Gly 175 180 His Asn Leu Phe Gly Ile Tyr Gln Lys Tyr Pro Val Lys Tyr Gly 190 Glu Gly Lys Cys Trp Thr Asp Asn Gly Pro Val Ile Pro Val Val 205 210 Tyr Asp Phe Gly Asp Ala Gln Lys Thr Ala Ser Tyr Tyr Ser Pro Tyr Gly Gln Arg Glu Phe Thr Ala Gly Phe Val Gln Phe Arg Val 235 240 Phe Asn Asn Glu Arg Ala Ala Asn Ala Leu Cys Ala Gly Met Arg Val Thr Gly Cys Asn Thr Glu His His Cys Ile Gly Gly Gly 265 Tyr Phe Pro Glu Ala Ser Pro Gln Gln Cys Gly Asp Phe Ser Gly 275 280 285 Phe Asp Trp Ser Gly Tyr Gly Thr His Val Gly Tyr Ser Ser Ser 295 Arg Glu Ile Thr Glu Ala Ala Val Leu Leu Phe Tyr Arg 305

<210> 415

<211> 1281

<212> DNA

<213> Homo sapiens

<400> 415

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teggegegeg aggtgettgg geeggetge teetggggae getgeaggtg 150
etagegetge tgggggeege eeatgaaage geageeatgg eggeatetge 200
aaacatagag aattetggge tteeacacaa eteeagtget aacteaacag 250
agaeteteea acatgtgeet tetgaceata caaatgaaac tteeaacagt 300
actgtgaaac eaceaactte agttgeetea gaeteeagfa atacaacggt 350
caccaccatg aaacetacag eggeatetaa tacaacaaca ecagggatgg 400
teteaacaaa tatgaettet aecacettaa agtetacace caaaacaaca 450
agtgttteac agaacacate teagatatea acateeacaa tgaeegtaac 500

ccacaatagt tcagtgacat ctgctgcttc atcagtaaca atcacaacaa 550 ctatgcattc tgaagcaaag aaaggatcaa aatttgatac tgggagcttt 600 gttggtggta ttgtattaac gctgggagtt ttatctattc tttacattgg 650 atgcaaaatg tattactcaa gaagaggcat tcggtatcga accatagatg 700 aacatgatgc catcatttaa ggaaatccat ggaccaagga tggaatacag 750 attgatgctg ccctatcaat taattttggt ttattaatag tttaaaacaa 800 tattctcttt ttgaaaatag tataaacagg ccatgcatat aatgtacagt 850 gtattacgta aatatgtaaa gattcttcaa ggtaacaagg gtttgggttt 900 tgaaataaac atctggatct tatagaccgt tcatacaatg gttttagcaa 950 gttcatagta agacaaacaa gtcctatctt ttttttttgg ctggggtggg 1000 ggcattggtc acatatgacc agtaattgaa agacgtcatc actgaaagac 1050 agaatgccat ctgggcatac aaataagaag tttgtcacag cactcaggat 1100 tttgggtate ttttgtaget cacataaaga acttcagtge ttttcagage 1150 tggatatatc ttaattacta atgccacaca gaaattatac aatcaaacta 1200 gatctgaagc ataatttaag aaaaacatca acattttttg tgctttaaac 1250 tgtagtagtt ggtctagaaa caaaatactc c 1281

<210> 416

<211> 208

<212> PRT

<213> Homo sapiens

<400> 416

Met Gly Leu Gly Ala Arg Gly Ala Trp Ala Ala Leu Leu Gly 1 5 10

Thr Leu Gln Val Leu Ala Leu Leu Gly Ala Ala His Glu Ser Ala 20 25 30

Ala Met Ala Ala Ser Ala Asn Ile Glu Asn Ser Gly Leu Pro His  $35 \hspace{1cm} 40 \hspace{1cm} 45$ 

Asn Ser Ser Ala Asn Ser Thr Glu Thr Leu Gln His Val Pro Ser 50 55 60

Asp His Thr Asn Glu Thr Ser Asn Ser Thr Val Lys Pro Pro Thr 65 70 75

Ser Val Ala Ser Asp Ser Ser Asn Thr Thr Val Thr Thr Met Lys 80 85 90

Pro Thr Ala Ala Ser Asn Thr Thr Thr Pro Gly Met Val Ser Thr 95 100 105

Asn Met Thr Ser Thr Thr Leu Lys Ser Thr Pro Lys Thr Thr Ser 110 115 120

Val Ser Gln Asn Thr Ser Gln Ile Ser Thr Ser Thr Met Thr Val

125 130 135 Thr His Asn Ser Ser Val Thr Ser Ala Ala Ser Ser Val Thr Ile 140 Thr Thr Met His Ser Glu Ala Lys Lys Gly Ser Lys Phe Asp Thr Gly Ser Phe Val Gly Gly Ile Val Leu Thr Leu Gly Val Leu 175 Ser Ile Leu Tyr Ile Gly Cys Lys Met Tyr Tyr Ser Arg Arg Gly 185 Ile Arg Tyr Arg Thr Ile Asp Glu His Asp Ala Ile Ile

200 <210> 417

<211> 1728 <212> DNA

<213> Homo sapiens

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ccaactgttg ctggaagatt caaaactgga agcaaaaact tgcttgattt 850 ttttttcttg ttaacgtaat aatagagaca tttttaaaag cacacagctc 900

aaagtcagcc aataagtctt ttcctatttg tgacttttac taataaaaat 950 aaatctgcct gtaaattatc ttgaagtcct ttacctggaa caagcactct 1000

<210> 418

<211> 198

<212> PRT

<213> Homo sapiens

<400> 418

Met Ala Thr Leu Trp Gly Gly Leu Leu Arg Leu Gly Ser Leu Leu 1 5 10 15

Ser Leu Ser Cys Leu Ala Leu Ser Val Leu Leu Leu Ala Gln Leu
20 25 30

Ser Asp Ala Ala Lys Asn Phe Glu Asp Val Arg Cys Lys Cys Ile 35 40 40

Cys Pro Pro Tyr Lys Glu Asn Ser Gly His Ile Tyr Asn Lys Asn 50 55 60

Ile Ser Gln Lys Asp Cys Asp Cys Leu His Val Val Glu Pro Met
65 70 75

Pro Val Arg Gly Pro Asp Val Glu Ala Tyr Cys Leu Arg Cys Glu 80 85 90

Cys Lys Tyr Glu Glu Arg Ser Ser Val Thr Ile Lys Val Thr Ile
95 100

Ile Ile Tyr Leu Ser Ile Leu Gly Leu Leu Leu Leu Tyr Met Val 110 115 120

Tyr Leu Thr Leu Val Glu Pro Ile Leu Lys Arg Arg Leu Phe Gly 125 130 135

His Ala Gln Leu Ile Gln Ser Asp Asp Ile Gly Asp His Gln  $140 \,$   $145 \,$  150

Pro Phe Ala Asn Ala His Asp Val Leu Ala Arg Ser Arg Ser Arg 155 160 165

Ala Asn Val Leu Asn Lys Val Glu Tyr Ala Gln Gln Arg Trp Lys 170 175 180

Leu Gln Val Gln Glu Gln Arg Lys Ser Val Phe Asp Arg His Val 185 190 195

Val Leu Ser

<210> 419

<211> 681

<212> DNA

<213> Homo sapiens

<400> 419

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<210> 420

<211> 128

<212> PRT

<213> Homo sapiens

<400> 420

Met Ala Tyr Ser Thr Val Gln Arg Val Ala Leu Ala Ser Gly Leu  $1 \hspace{1cm} 5 \hspace{1cm} 10 \hspace{1cm} 15$ 

Val Leu Ala Leu Ser Leu Leu Leu Pro Lys Ala Phe Leu Ser Arg 20 25 30

Gly Lys Arg Gln Glu Pro Pro Pro Thr Pro Glu Gly Lys Leu Gly 35 40 45

Arg Phe Pro Pro Met Met His His His Gln Ala Pro Ser Asp Gly 60 Gln Thr Pro Gly Ala Arg Phe Gln Arg Ser 70 His Leu Ala Glu Ala 75 Phe Ala Lys Ala Lys Gly Ser Gly Gly Gly 85 Ala Gly Gly Gly 90 Ser Gly Arg Gly Leu Met Gly Gln Ile Ile Pro Ile Tyr Gly Phe 105 Gly Ile Phe Leu Tyr Ile Leu Tyr Ile Leu Phe Lys Val Ser Arg 120

Ile Ile Leu Ile Ile Leu His Gln 125

<210> 421 <211> 1630 <212> DNA <213> Homo sapien

<213> Homo sapiens

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aaagaaaaaac cetgecattt tgaaagatgt gaaggggaga aacacattta 1100
ctccccaata attgtacggg aggtgatcga ggaagaagaa ccaagtgaaa 1150
aatcagagge cacctacatg accatgcace cagtttggee ttetetgagg 1200
teagategga acaacteact tgaaaaaaaag teaggtgggg gaatgecaaa 1250
aacacageaa geettttgag aagaatggag agteeettea teteageage 1300
ggtggagact eteteetgtg tgtgteetgg geeactetae cagtgatte 1350
agacteeege teteceaget gteeteetgt eteattgtt ggteaataca 1400
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acactggeee tgggaaceag getgagetga gtggeeteaa acceeegtt 1550
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<210> 422

<211> 394

<212> PRT

<213> Homo sapiens

<400> 422

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Tyr Ser Leu Gly Leu Asn Asp Leu Asn Val Ser Pro Pro Glu Leu 20 25 30

Thr Val His Val Gly Asp Ser Ala Leu Met Gly Cys Val Phe Gln 35 40 45

Ser Thr Glu Asp Lys Cys Ile Phe Lys Ile Asp Trp Thr Leu Ser 50 55 60

Pro Gly Glu His Ala Lys Asp Glu Tyr Val Leu Tyr Tyr Ser 65 70 75

Asn Leu Ser Val Pro Ile Gly Arg Phe Gln Asn Arg Val His Leu 80 85 90

Met Gly Asp Ile Leu Cys Asn Asp Gly Ser Leu Leu Gln Asp 95 100 105

Val Gln Glu Ala Asp Gln Gly Thr Tyr Ile Cys Glu Ile Arg Leu 110 115 120

Lys Gly Glu Ser Gln Val Phe Lys Lys Ala Val Val Leu His Val 125 130 135

Leu Pro Glu Glu Pro Lys Glu Leu Met Val His Val Gly Gly Leu
140 145 150

Ile Gln Met Gly Cys Val Phe Gln Ser Thr Glu Val Lys His Val

155 160 165

Thr Lys Val Glu Trp Ile Phe Ser Gly Arg Arg Ala Lys Glu Glu 170 175 180

Ile Val Phe Arg Tyr Tyr His Lys Leu Arg Met Ser Val Glu Tyr 185 190 195

Ser Gln Ser Trp Gly His Phe Gln Asn Arg Val Asn Leu Val Gly 200 205 210

Asp Ile Phe Arg Asn Asp Gly Ser Ile Met Leu Gln Gly Val Arg 215 220 225

Glu Ser Asp Gly Gly Asn Tyr Thr Cys Ser Ile His Leu Gly Asn 230 235 240

Leu Val Phe Lys Lys Thr Ile Val Leu His Val Ser Pro Glu Glu 245 250

Pro Arg Thr Leu Val Thr Pro Ala Ala Leu Arg Pro Leu Val Leu 260 265 270

Gly Gly Asn Gln Leu Val Ile Ile Val Gly Ile Val Cys Ala Thr 275 280 285

Ile Leu Leu Pro Val Leu Ile Leu Ile Val Lys Lys Thr Cys 290 295 300

Gly Asn Lys Ser Ser Val Asn Ser Thr Val Leu Val Lys Asn Thr 305 310 315

Lys Lys Thr Asn Pro Glu Ile Lys Glu Lys Pro Cys His Phe Glu 320 325 330

Arg Cys Glu Gly Glu Lys His Ile Tyr Ser Pro Ile Ile Val Arg 335 340

Glu Val Ile Glu Glu Glu Glu Pro Ser Glu Lys Ser Glu Ala Thr 350 355 360

Tyr Met Thr Met His Pro Val Trp Pro Ser Leu Arg Ser Asp Arg 365 370 375

Asn Asn Ser Leu Glu Lys Lys Ser Gly Gly Gly Met Pro Lys Thr 380 385 385

Gln Gln Ala Phe

<210> 423

<211> 963

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<400> 423

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acatcacctt aaatattaaa actcggaaac cagctctcgt ctccgttggc 250 cctgcatcct cctcctggtg gcgtgtgatg gctttgattc tgctgatcct 300 gtgcgtgggg atggttgtcg ggctggtggc tctggggatt tggtctgtca 350 tgcagcgcaa ttacctacaa gatgagaatg aaaatcgcac aggaactctg 400 caacaattag caaagcgctt ctgtcaatat gtggtaaaac aatcagaact 450 aaagggcact ttcaaaggtc ataaatgcag cccctgtgac acaaactgga 500 gatattatgg agatagctgc tatgggttct tcaggcacaa cttaacatgg 550 gaagagagta agcagtactg cactgacatg aatgctactc tcctgaagat 600 tgacaaccgg aacattgtgg agtacatcaa agccaggact catttaattc 650 gttgggtcgg attatctcgc cagaagtcga atgaggtctg gaagtgggag 700 gatggctcgg ttatctcaga aaatatgttt gagtttttgg aagatggaaa 750 aggaaatatg aattgtgctt attttcataa tgggaaaatg caccctacct 800 tctgtgagaa caaacattat ttaatgtgtg agaggaaggc tggcatgacc 850 aaggtggacc aactacctta atgcaaagag gtggacagga taacacagat 900 aagggcttta ttgtacaata aaagatatgt atgaatgcat cagtagctga 950 aaaaaaaaa aaa 963

<210> 424

<211> 229

<212> PRT

<213> Homo sapiens

<400> 424

Met Gln Asp Glu Asp Gly Tyr Ile Thr Leu Asn Ile Lys Thr Arg
1 5 10 15

Lys Pro Ala Leu Val Ser Val Gly Pro Ala Ser Ser Ser Trp Trp 20 25 30

Arg Val Met Ala Leu Ile Leu Leu Ile Leu Cys Val Gly Met Val 35 40 45

Val Gly Leu Val Ala Leu Gly Ile Trp Ser Val Met Gln Arg Asn
50 55 60

Tyr Leu Gln Asp Glu Asn Glu Asn Arg Thr Gly Thr Leu Gln Gln
65 70 75

Leu Ala Lys Arg Phe Cys Gln Tyr Val Val Lys Gln Ser Glu Leu 80 85 90

Lys Gly Thr Phe Lys Gly His Lys Cys Ser Pro Cys Asp Thr Asn 95 100 105

Trp Arg Tyr Tyr Gly Asp Ser Cys Tyr Gly Phe Phe Arg His Asn 110 115 120

Leu Thr Trp Glu Glu Ser Lys Gln Tyr Cys Thr Asp Met Asn Ala

			125					130					135	
Thr L	eu Leu	Lys	Ile 140	Asp	Asn	Arg	Asn	Ile 145	Val	Glu	Tyr	Ile	Lys 150	
Ala A	rg Thr	His	Leu 155	Ile	Arg	Trp	Val	Gly 160	Leu	Ser	Arg	Gln	Lys 165	
Ser A	sn Glu	Val	Trp 170	Lys	Trp	Glu	Asp	Gly 175	Ser	Val	Ile	Ser	Glu 180	
Asn M	et Phe	Glu	Phe 185	Leu	Glu	Asp	Gly	Lys 190	Gly	Asn	Met	Asn	Cys 195	
Ala T	yr Phe	His	Asn 200	Gly	Lys	Met	His	Pro 205	Thr	Phe	Cys	Glu	Asr 210	
Lys H	is Tyr	Leu	Met 215	Cys	Glu	Arg	Lys	Ala 220	Gly	Met	Thr	Lys	Val 225	
Asp G	ln Leu	Pro												
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<220> <223> S	Synthet	ic o	ligo	nucl	eoti	de p	robe							

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<400> 428
ccaccaatgg cagccccacc t 21
<210> 429
<211> 17
<212> DNA
<213> Artificial Sequence
<223> Synthetic oligonucleotide probe
<400> 429
gactgccctc cctgcca 17
<210> 430
<211> 24
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caaaaagcct ggaagtcttc aaag 24
<210> 431
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<210> 437
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<210> 438
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<400> 439
tgctctgttg gctacggctt tagtccctag 30
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<211> 22
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group, grade, activity gates, terrest present season control of the season control of th
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<210> 447
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<210> 448
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<210> 462
<211> 27
<212> DNA
<213> Artificial Sequence
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<210> 463
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<211> 20
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<211> 26
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<210> 466
<211> 31
<212> DNA
<213> Artificial Sequence
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<223> Synthetic oligonucleotide probe
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<210> 467
<211> 22
<212> DNA
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<223> Synthetic oligonucleotide probe
<400> 467
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<210> 468
<211> 23
<212> DNA
<213> Artificial Sequence
<220>
<223> Synthetic oligonucleotide probe
<400> 468
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arms, garms, garms, garms, manns, mann, ma
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<211> 25
<212> DNA
<213> Artificial Sequence
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<223> Synthetic oligonucleotide probe
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<210> 470
<211> 22
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<400> 473
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<212> DNA
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gtgggcagcg tcttgtc 17
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 cagecegege gggageegga eegeegeegg aggagetegg aeggeatget 150
 gagccccctc ctttgctgaa gcccgagtgc ggagaagccc gggcaaacgc 200
 aggctaagga gaccaaagcg gcgaagtcgc gagacagcgg acaagcagcg 250
 gaggagaagg aggaggaggc gaacccagag aggggcagca aaagaagcgg 300
tggtggtggg cgtcgtggcc atggcggcgg ctatcgccag ctcqctcatc 350
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ttctgcctaa accactgaaa gtggccatgt acaaggagcc atcactgcac 950 gatctcacgg agttctcccg atctggaagc gggaccccaa ccaagagcag 1000 aagtgtctct ggcgtgctga acggaggcaa atccatgagc cacaatgaat 1050 caacgtagcc agtgagggca aaagaagggc tctgtaacag aaccttacct 1100 ccaggtgctg ttgaattctt ctagcagtcc ttcacccaaa agttcaaatt 1150 tgtcagtgac atttaccaaa caaacaggca gagttcacta ttctatctgc 1200 cattagacct tcttatcatc catactaaag c 1231

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<211> 245

<212> PRT

<213> Homo Sapien

<400> 495

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Ala Arg Glu Arg Glu Lys Ser Asn Ala Cys Lys Cys Val Ser Ser 20 25 30

Pro Ser Lys Gly Lys Thr Ser Cys Asp Lys Asn Lys Leu Asn Val 35 40 45

Phe Ser Arg Val Lys Leu Phe Gly Ser Lys Lys Arg Arg Arg 50 55 60

Arg Pro Glu Pro Gln Leu Lys Gly Ile Val Thr Lys Leu Tyr Ser 65 70 75

Arg Gln Gly Tyr His Leu Gln Leu Gln Ala Asp Gly Thr Ile Asp 80 85 90

Gly Thr Lys Asp Glu Asp Ser Thr Tyr Thr Leu Phe Asn Leu Ile 95 100 105

Pro Val Gly Leu Arg Val Val Ala Ile Gln Gly Val Gln Thr Lys 110 115 120

Leu Tyr Leu Ala Met Asn Ser Glu Gly Tyr Leu Tyr Thr Ser Glu 125 130 135

Leu Phe Thr Pro Glu Cys Lys Phe Lys Glu Ser Val Phe Glu Asn 140 145 150

Tyr Tyr Val Thr Tyr Ser Ser Met Ile Tyr Arg Gln Gln Gln Ser 155 160 165

Gly Arg Gly Trp Tyr Leu Gly Leu Asn Lys Glu Gly Glu Ile Met 170 175 180

Lys Gly Asn His Val Lys Lys Asn Lys Pro Ala Ala His Phe Leu 185 190

Pro Lys Pro Leu Lys Val Ala Met Tyr Lys Glu Pro Ser Leu His 200 205 210

Asp Leu Thr Glu Phe Ser Arg Ser Gly Ser Gly Thr Pro Thr Lys

215 220 225 Ser Arg Ser Val Ser Gly Val Leu Asn Gly Gly Lys Ser Met Ser

230 235 Lys Ser Met Se.

His Asn Glu Ser Thr 245

<210> 496 <211> 1471

<212> DNA

<213> Homo Sapien

<400> 496

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<210> 497

<211> 225

<212> PRT

<213> Homo Sapien

<400> 497

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Arg Glu Pro Gly Gly Ser Arg Pro Val Ser Ala Gln Arg Arg Val 20 25 30

Cys Pro Arg Gly Thr Lys Ser Leu Cys Gln Lys Gln Leu Leu Ile 35 40

Leu Leu Ser Lys Val Arg Leu Cys Gly Gly Arg Pro Ala Arg Pro
50 55 60

Asp Arg Gly Pro Glu Pro Gln Leu Lys Gly Ile Val Thr Lys Leu
65 70 75

Phe Cys Arg Gln Gly Phe Tyr Leu Gln Ala Asn Pro Asp Gly Ser 80 85 90

Ile Gln Gly Thr Pro Glu Asp Thr Ser Ser Phe Thr His Phe Asn 95 100 105

Leu Ile Pro Val Gly Leu Arg Val Val Thr Ile Gln Ser Ala Lys 110 115 120

Leu Gly His Tyr Met Ala Met Asn Ala Glu Gly Leu Leu Tyr Ser 125 130 135

Ser Pro His Phe Thr Ala Glu Cys Arg Phe Lys Glu Cys Val Phe 140 145 150

Glu Asn Tyr Tyr Val Leu Tyr Ala Ser Ala Leu Tyr Arg Gln Arg 155 160 165

Arg Ser Gly Arg Ala Trp Tyr Leu Gly Leu Asp Lys Glu Gly Gln
170 175

Val Met Lys Gly Asn Arg Val Lys Lys Thr Lys Ala Ala His 185 190 195

Phe Leu Pro Lys Leu Leu Glu Val Ala Met Tyr Gln Glu Pro Ser 200 205 210

Leu His Ser Val Pro Glu Ala Ser Pro Ser Ser Pro Pro Ala Pro 215 220 225

<210> 498 <211> 744

<212> DNA <213> Homo Sapien

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<210> 499 <211> 247

<212> PRT

<213> Homo Sapien

<400> 499

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Ala Arg Glu Gln His Trp Asp Arg Pro Ser Ala Ser Arg Arg Arg 20 25 30

Ser Ser Pro Ser Lys Asn Arg Gly Leu Cys Asn Gly Asn Leu Val 35 40 45

Asp Ile Phe Ser Lys Val Arg Ile Phe Gly Leu Lys Lys Arg Arg 50 55

Leu Arg Arg Gln Asp Pro Gln Leu Lys Gly Ile Val Thr Arg Leu 65 70 75

Tyr Cys Arg Gln Gly Tyr Tyr Leu Gln Met His Pro Asp Gly Ala 80 85 90

Leu Asp Gly Thr Lys Asp Asp Ser Thr Asn Ser Thr Leu Phe Asn 95 100 105

Leu Ile Pro Val Gly Leu Arg Val Val Ala Ile Gln Gly Val Lys 110 115 120

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Thr Gly Leu Tyr Ile Ala Met Asn Gly Glu Gly Tyr Leu Tyr Pro
Ser Glu Leu Phe Thr Pro Glu Cys Lys Phe Lys Glu Ser Val Phe
Glu Asn Tyr Tyr Val Ile Tyr Ser Ser Met Leu Tyr Arg Gln Gln
                155
                                     160
                                                         165
Glu Ser Gly Arg Ala Trp Phe Leu Gly Leu Asn Lys Glu Gly Gln
                170
Ala Met Lys Gly Asn Arg Val Lys Lys Thr Lys Pro Ala Ala His
                185
Phe Leu Pro Lys Pro Leu Glu Val Ala Met Tyr Arg Glu Pro Ser
                200
Leu His Asp Val Gly Glu Thr Val Pro Lys Pro Gly Val Thr Pro
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Ser Lys Ser Thr Ser Ala Ser Ala Ile Met Asn Gly Gly Lys Pro
Val Asn Lys Ser Lys Thr Thr
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<212> DNA

<213> Homo Sapien

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<210> 501 <211> 640 <212> PRT <213> Homo S

<213> Homo Sapien

<400> 501

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Tyr Ala Phe Asn Arg Ile Pro Ser Leu Arg Arg Leu Asp Leu Gly 170 Glu Leu Lys Arg Leu Ser Tyr Ile Ser Glu Gly Ala Phe Glu Gly Leu Ser Asn Leu Arg Tyr Leu Asn Leu Ala Met Cys Asn Leu Arg 200 205 Glu Ile Pro Asn Leu Thr Pro Leu Ile Lys Leu Asp Glu Leu Asp Leu Ser Gly Asn His Leu Ser Ala Ile Arg Pro Gly Ser Phe Gln 230 Gly Leu Met His Leu Gln Lys Leu Trp Met Ile Gln Ser Gln Ile Gln Val Ile Glu Arg Asn Ala Phe Asp Asn Leu Gln Ser Leu Val 260 265 270 Glu Ile Asn Leu Ala His Asn Asn Leu Thr Leu Leu Pro His Asp Leu Phe Thr Pro Leu His His Leu Glu Arg Ile His Leu His His Asn Pro Trp Asn Cys Asn Cys Asp Ile Leu Trp Leu Ser Trp Trp 305 315 310 Ile Lys Asp Met Ala Pro Ser Asn Thr Ala Cys Cys Ala Arg Cys 320 Asn Thr Pro Pro Asn Leu Lys Gly Arg Tyr Ile Gly Glu Leu Asp 335 Gln Asn Tyr Phe Thr Cys Tyr Ala Pro Val Ile Val Glu Pro Pro 355 Ala Asp Leu Asn Val Thr Glu Gly Met Ala Ala Glu Leu Lys Cys Arg Ala Ser Thr Ser Leu Thr Ser Val Ser Trp Ile Thr Pro Asn 380 Gly Thr Val Met Thr His Gly Ala Tyr Lys Val Arg Ile Ala Val 400 Leu Ser Asp Gly Thr Leu Asn Phe Thr Asn Val Thr Val Gln Asp 410 Thr Gly Met Tyr Thr Cys Met Val Ser Asn Ser Val Gly Asn Thr Thr Ala Ser Ala Thr Leu Asn Val Thr Ala Ala Thr Thr Thr Pro 445 450 Phe Ser Tyr Phe Ser Thr Val Thr Val Glu Thr Met Glu Pro Ser Gln Asp Glu Ala Arg Thr Thr Asp Asn Asn Val Gly Pro Thr Pro 475

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Val Val Asp Trp Glu Thr Thr Asn Val Thr Thr Ser Leu Thr Pro
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                                                         495
Gln Ser Thr Arg Ser Thr Glu Lys Thr Phe Thr Ile Pro Val Thr
                500
                                                         510
Asp Ile Asn Ser Gly Ile Pro Gly Ile Asp Glu Val Met Lys Thr
                515
                                     520
Thr Lys Ile Ile Gly Cys Phe Val Ala Ile Thr Leu Met Ala
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Ala Val Met Leu Val Ile Phe Tyr Lys Met Arg Lys Gln His His
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                                                         555
Arg Gln Asn His His Ala Pro Thr Arg Thr Val Glu Ile Ile Asn
                560
Val Asp Asp Glu Ile Thr Gly Asp Thr Pro Met Glu Ser His Leu
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Pro Met Pro Ala Ile Glu His Glu His Leu Asn His Tyr Asn Ser
Tyr Lys Ser Pro Phe Asn His Thr Thr Thr Val Asn Thr Ile Asn
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Ser Ile His Ser Ser Val His Glu Pro Leu Leu Ile Arg Met Asn
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<211> 2458

<212> DNA

<213> Homo Sapien

<400> 502

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<210> 503

<211> 373

<212> PRT

<213> Homo Sapien

<400> 503

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Thr Leu Gly Thr His Thr Glu Ile Lys Arg Val Ala Glu Glu Lys 20 25 30

Val Thr Leu Pro Cys His His Gln Leu Gly Leu Pro Glu Lys Asp 35 40 45

Thr Leu Asp Ile Glu Trp Leu Leu Thr Asp Asn Glu Gly Asn Gln 50 55 60

Lys Val Val Ile Thr Tyr Ser Ser Arg His Val Tyr Asn Asn Leu 65 70 75

Thr Glu Glu Gln Lys Gly Arg Val Ala Phe Ala Ser Asn Phe Leu 80 85 90

Ala Gly Asp Ala Ser Leu Gln Ile Glu Pro Leu Lys Pro Ser Asp 95 100 105

Glu Gly Arg Tyr Thr Cys Lys Val Lys Asn Ser Gly Arg Tyr Val 110 115

Trp Ser His Val Ile Leu Lys Val Leu Val Arg Pro Ser Lys Pro 125 130 135

Lys Cys Glu Leu Glu Gly Glu Leu Thr Glu Gly Ser Asp Leu Thr 140 145 150

Leu Gln Cys Glu Ser Ser Ser Gly Thr Glu Pro Ile Val Tyr Tyr 155 160 165

Trp Gln Arg Ile Arg Glu Lys Glu Gly Glu Asp Glu Arg Leu Pro 170 175 180

Pro Lys Ser Arg Ile Asp Tyr Asn His Pro Gly Arg Val Leu Leu 185 190 195

Gln Asn Leu Thr Met Ser Tyr Ser Gly Leu Tyr Gln Cys Thr Ala 200 205 210

Gly Asn Glu Ala Gly Lys Glu Ser Cys Val Val Arg Val Thr Val 215 220 225

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Gln Tyr Val Gln Ser Ile Gly Met Val Ala Gly Ala Val Thr Gly
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Ile Val Ala Gly Ala Leu Leu Ile Phe Leu Leu Val Trp Leu Leu
Ile Arg Arg Lys Asp Lys Glu Arg Tyr Glu Glu Glu Arg Pro
                260
                                    265
Asn Glu Ile Arg Glu Asp Ala Glu Ala Pro Lys Ala Arg Leu Val
                                                        285
Lys Pro Ser Ser Ser Ser Gly Ser Arg Ser Ser Ser Gly
                290
                                                        300
Ser Ser Ser Thr Arg Ser Thr Ala Asn Ser Ala Ser Arg Ser Gln
                305
Arg Thr Leu Ser Thr Asp Ala Ala Pro Gln Pro Gly Leu Ala Thr
                320
                                    325
                                                        330
Gln Ala Tyr Ser Leu Val Gly Pro Glu Val Arg Gly Ser Glu Pro
Lys Lys Val His His Ala Asn Leu Thr Lys Ala Glu Thr Thr Pro
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<210> 504

<211> 3060

<212> DNA

<213> Homo Sapien

<400> 504

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<210> 505

<211> 352

<212> PRT

<213> Homo Sapien

<400> 505

Met Ala Leu Leu Cys Phe Val Leu Leu Cys Gly Val Val Asp 1 5 10 15

Phe Ala Arg Ser Leu Ser Ile Thr Thr Pro Glu Glu Met Ile Glu 20 25 30

Lys Ala Lys Gly Glu Thr Ala Tyr Leu Pro Cys Lys Phe Thr Leu 35 40 45

Ser Pro Glu Asp Gln Gly Pro Leu Asp Ile Glu Trp Leu Ile Ser 50 55

Pro Ala Asp Asn Gln Lys Val Asp Gln Val Ile Ile Leu Tyr Ser 65 70 75

Gly Asp Lys Ile Tyr Asp Asp Tyr Tyr Pro Asp Leu Lys Gly Arg 80 85 90

Val His Phe Thr Ser Asn Asp Leu Lys Ser Gly Asp Ala Ser Ile 95 100 105

Asn Val Thr Asn Leu Gln Leu Ser Asp Ile Gly Thr Tyr Gln Cys 110 115

Lys Val Lys Lys Ala Pro Gly Val Ala Asn Lys Lys Ile His Leu

125 130 135 Val Val Leu Val Lys Pro Ser Gly Ala Arg Cys Tyr Val Asp Gly Ser Glu Glu Ile Gly Ser Asp Phe Lys Ile Lys Cys Glu Pro Lys 160 Glu Gly Ser Leu Pro Leu Gln Tyr Glu Trp Gln Lys Leu Ser Asp 170 175 Ser Gln Lys Met Pro Thr Ser Trp Leu Ala Glu Met Thr Ser Ser 185 Val Ile Ser Val Lys Asn Ala Ser Ser Glu Tyr Ser Gly Thr Tyr 200 205 Ser Cys Thr Val Arg Asn Arg Val Gly Ser Asp Gln Cys Leu Leu 215 Arg Leu Asn Val Val Pro Pro Ser Asn Lys Ala Gly Leu Ile Ala 230 235 240 Gly Ala Ile Ile Gly Thr Leu Leu Ala Leu Ala Leu Ile Gly Leu 250 Ile Ile Phe Cys Cys Arg Lys Lys Arg Arg Glu Glu Lys Tyr Glu 265 Lys Glu Val His His Asp Ile Arg Glu Asp Val Pro Pro Lys 275 280 285 Ser Arg Thr Ser Thr Ala Arg Ser Tyr Ile Gly Ser Asn His Ser 290 295 Ser Leu Gly Ser Met Ser Pro Ser Asn Met Glu Gly Tyr Ser Lys 305 Thr Gln Tyr Asn Gln Val Pro Ser Glu Asp Phe Glu Arg Thr Pro 320 325 Gln Ser Pro Thr Leu Pro Pro Ala Lys Phe Lys Tyr Pro Tyr Lys 335 Thr Asp Gly Ile Thr Val Val 350

<210> 506

<211> 1705

<212> DNA

<213> Homo Sapien

<400> 506

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ccagctgcct ccaggcagcc agccctcaag catcacttac aggaccagag 150
ggacaagaca tgactgtgat gaggagctgc tttcgccaat ttaacaccaa 200
gaagaattga ggctgcttgg gaggaaggcc aggaggaaca cgagactgag 250

agatgaattt tcaacagagg ctgcaaagcc tgtggacttt agccagaccc 300 ttctgccctc ctttgctggc gacagcctct caaatgcaga tggttgtgct 350 cccttgcctg ggttttaccc tgcttctctg gagccaggta tcaggggccc 400 agggccaaga attccacttt gggccctgcc aagtgaaggg ggttgttccc 450 cagaaactgt gggaagcett ctgggctgtg aaagacacta tgcaagctca 500 ggataacatc acgagtgccc ggctgctgca gcaggaggtt ctgcagaacg 550 tctcggatgc tgagagctgt taccttgtcc acaccctgct ggagttctac 600 ttgaaaactg ttttcaaaaa ccaccacaat agaacagttg aagtcaggac 650 tctgaagtca ttctctactc tggccaacaa ctttgttctc atcgtgtcac 700 aactgcaacc cagtcaagaa aatgagatgt tttccatcag agacagtgca 750 cacaggcggt ttctgctatt ccggagagca ttcaaacagt tggacgtaga 800 agcagetetg accaaageee ttggggaagt ggacattett etgacetgga 850 tgcagaaatt ctacaagctc tgaatgtcta gaccaggacc tccctccccc 900 tggcactggt ttgttccctg tgtcatttca aacagtctcc cttcctatgc 950 tgttcactgg acacttcacg cccttggcca tgggtcccat tcttggccca 1000 ggattattgt caaagaagtc attctttaag cagcgccagt gacagtcagg 1050 gaaggtgcct ctggatgctg tgaagagtct acagagaaga ttcttgtatt 1100 tattacaact ctatttaatt aatgtcagta tttcaactga agttctattt 1150 atttgtgaga ctgtaagtta catgaaggca gcagaatatt gtgccccatg 1200 cttctttacc cctcacaatc cttgccacag tgtggggcag tggatgggtg 1250 cttagtaagt acttaataaa ctgtggtgct ttttttggcc tgtctttgga 1300 ttgttaaaaa acagagaggg atgcttggat gtaaaactga acttcagagc 1350 atgaaaatca cactgtcttc tgatatctgc agggacagag cattggggtg 1400 ggggtaaggt gcatctgttt gaaaagtaaa cgataaaatg tggattaaag 1450 tegecagete acceeateat ecettteeet tggtgeeete ettttttt 1550 tatectagte attetteect aatetteeac ttgagtgtea agetgaeett 1600 gctgatggtg acattgcacc tggatgtact atccaatctg tgatgacatt 1650 aaaaa 1705

<sup>&</sup>lt;210> 507

<sup>&</sup>lt;211> 206

<sup>&</sup>lt;212> PRT

## <213> Homo Sapien

<400> 507 Met Asn Phe Gln Gln Arg Leu Gln Ser Leu Trp Thr Leu Ala Arg Pro Phe Cys Pro Pro Leu Leu Ala Thr Ala Ser Gln Met Gln Met 20 Val Val Leu Pro Cys Leu Gly Phe Thr Leu Leu Leu Trp Ser Gln Val Ser Gly Ala Gln Gly Gln Glu Phe His Phe Gly Pro Cys Gln Val Lys Gly Val Val Pro Gln Lys Leu Trp Glu Ala Phe Trp Ala Val Lys Asp Thr Met Gln Ala Gln Asp Asn Ile Thr Ser Ala Arg Leu Leu Gln Gln Glu Val Leu Gln Asn Val Ser Asp Ala Glu Ser 100 Cys Tyr Leu Val His Thr Leu Leu Glu Phe Tyr Leu Lys Thr Val Phe Lys Asn His His Asn Arg Thr Val Glu Val Arg Thr Leu Lys 125 130 Ser Phe Ser Thr Leu Ala Asn Asn Phe Val Leu Ile Val Ser Gln 145 Leu Gln Pro Ser Gln Glu Asn Glu Met Phe Ser Ile Arg Asp Ser 155 160 Ala His Arg Arg Phe Leu Leu Phe Arg Arg Ala Phe Lys Gln Leu 170 175

Leu Leu Thr Trp Met Gln Lys Phe Tyr Lys Leu

<210> 508

<211> 924

<212> DNA

<213> Homo Sapien

<400> 508

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tecetttggc tectgggtac aatactgata ttgtgetcag tagacaacca 100
cggtetcagg agatgtetga tttecacaga catgcaccat atagaagaga 150
gtttecaaga aatcaaaaga gecatecaag etaaggacac etteceaaat 200
gtcactatec tgtecacatt ggagaetetg cagateatta agecettaga 250
tgtgtgetge gtgaccaaga aceteetgge gttetaegtg gacagggtgt 300

Asp Val Glu Ala Ala Leu Thr Lys Ala Leu Gly Glu Val Asp Ile

tcaaggatca tcaggagcca aaccccaaaa tcttgagaaa aatcagcagc 350 attgccaact ctttcctcta catgcagaaa actctgcggc aatgtcagga 400 acagaggcag tgtcactgca ggcaggaagc caccaatgcc accagagtca 450 tccatgacaa ctatgatcag ctggaggtcc acgctgctgc cattaaatcc 500 ctgggagagc tcgacgtct tctagcctgg attaataaga atcatgaagt 550 aatgttctca gcttgatgac aaggaacctg tatagtgatc cagggatgaa 600 cacccctgt gcggtttact gtgggagaca gcccaccttg aaggggaagg 650 agatggggaa ggcccttgc agctgaaagt cccactggct gcgctcaggc 700 tgtcttattc cgcttgaaaa taggcaaaaa gtctactgtg gtatttgtaa 750 taaactctat ctgctgaaag ggcctgcagg ccatcctggg agtaaagggc 800 tgccttccca tctaatttat tgtaaagtca tatagtccat gtctgtgatg 850 tgagccaagt gatatcctgt agtaccatt gtactgagtg gttttctga 900 ataaattcca tattttacct atga 924

<210> 509 <211> 177 <212> PRT

<213> Homo Sapien

<400> 509

Met Lys Leu Gln Cys Val Ser Leu Trp Leu Leu Gly Thr Ile Leu  $1 \hspace{1.5cm} 5 \hspace{1.5cm} 10 \hspace{1.5cm} 15$ 

Ile Leu Cys Ser Val Asp Asn His Gly Leu Arg Arg Cys Leu Ile  $20 \hspace{1.5cm} 25 \hspace{1.5cm} 30$ 

Ser Thr Asp Met His His Ile Glu Glu Ser Phe Gln Glu Ile Lys 35 40 45

Arg Ala Ile Gln Ala Lys Asp Thr Phe Pro Asn Val Thr Ile Leu
50 55 60

Ser Thr Leu Glu Thr Leu Gln Ile Ile Lys Pro Leu Asp Val Cys  $65 \hspace{1cm} 70 \hspace{1cm} 75$ 

Cys Val Thr Lys Asn Leu Leu Ala Phe Tyr Val Asp Arg Val Phe 80 85 90

Lys Asp His Gln Glu Pro Asn Pro Lys Ile Leu Arg Lys Ile Ser 95 100 105

Ser Ile Ala Asn Ser Phe Leu Tyr Met Gln Lys Thr Leu Arg Gln 110 115 120

Cys Gln Glu Gln Arg Gln Cys His Cys Arg Gln Glu Ala Thr Asn 125 130 135

Ala Thr Arg Val Ile His Asp Asn Tyr Asp Gln Leu Glu Val His 140 145 150

Ala Ala Ile Lys Ser Leu Gly Glu Leu Asp Val Phe Leu Ala

155 160 165

Trp Ile Asn Lys Asn His Glu Val Met Phe Ser Ala 170 175

<210> 510

<211> 996

<212> DNA

<213> Homo Sapien

<400> 510

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<210> 511

<211> 251

<212> PRT

<213> Homo Sapien

<400> 511

Met Leu Gly Ala Arg Leu Arg Leu Trp Val Cys Ala Leu Cys Ser  $1 \hspace{1.5cm} 5 \hspace{1.5cm} 10 \hspace{1.5cm} 15$ 

Val Cys Ser Met Ser Val Leu Arg Ala Tyr Pro Asn Ala Ser Pro 20 25 30

```
Leu Leu Gly Ser Ser Trp Gly Gly Leu Ile His Leu Tyr Thr Ala
Thr Ala Arg Asn Ser Tyr His Leu Gln Ile His Lys Asn Gly His
Val Asp Gly Ala Pro His Gln Thr Ile Tyr Ser Ala Leu Met Ile
                 65
                                      70
Arg Ser Glu Asp Ala Gly Phe Val Val Ile Thr Gly Val Met Ser
Arg Arg Tyr Leu Cys Met Asp Phe Arg Gly Asn Ile Phe Gly Ser
His Tyr Phe Asp Pro Glu Asn Cys Arg Phe Gln His Gln Thr Leu
                110
                                     115
Glu Asn Gly Tyr Asp Val Tyr His Ser Pro Gln Tyr His Phe Leu
                                    130
                                                         135
Val Ser Leu Gly Arg Ala Lys Arg Ala Phe Leu Pro Gly Met Asn
                140
Pro Pro Pro Tyr Ser Gln Phe Leu Ser Arg Arg Asn Glu Ile Pro
                155
                                     160
Leu Ile His Phe Asn Thr Pro Ile Pro Arg Arg His Thr Arg Ser
                170
                                    175
                                                         180
Ala Glu Asp Asp Ser Glu Arg Asp Pro Leu Asn Val Leu Lys Pro
                                    190
Arg Ala Arg Met Thr Pro Ala Pro Ala Ser Cys Ser Gln Glu Leu
                200
Pro Ser Ala Glu Asp Asn Ser Pro Met Ala Ser Asp Pro Leu Gly
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                                                         225
Val Val Arg Gly Gly Arg Val Asn Thr His Ala Gly Gly Thr Gly
                                                         240
Pro Glu Gly Cys Arg Pro Phe Ala Lys Phe Ile
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<210> 512

<211> 2015

<212> DNA

<213> Homo Sapien

245

<400> 512

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<210> 513

<211> 482

<212> PRT

<213> Homo Sapien

<400> 513

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Trp Glu Val Gly Val Ser Gly Ser Ser Ala Gly Pro Ser Thr Arg  $20 \\ 25 \\ 30$ 

Arg Ala Asp Thr Ala Met Thr Thr Asp Asp Thr Glu Val Pro Ala 35 40 45

Met Thr Leu Ala Pro Gly His Ala Ala Leu Glu Thr Gln Thr Leu 50 55 60

Ser Ala Glu Thr Ser Ser Arg Ala Ser Thr Pro Ala Gly Pro Ile  $\phantom{0}65\phantom{0}70\phantom{0}75$ 

Pro Glu Ala Glu Thr Arg Gly Ala Lys Arg Ile Ser Pro Ala Arg 80 85 90

Glu Thr Arg Ser Phe Thr Lys Thr Ser Pro Asn Phe Met Val Leu 95 100 105

Ile Ala Thr Ser Val Glu Thr Ser Ala Ala Ser Gly Ser Pro Glu
110 115 120

Gly Ala Gly Met Thr Thr Val Gln Thr Ile Thr Gly Ser Asp Pro 125 130 135

Glu Glu Ala Ile Phe Asp Thr Leu Cys Thr Asp Asp Ser Ser Glu 140 145 150

Glu Ala Lys Thr Leu Thr Met Asp Ile Leu Thr Leu Ala His Thr
155 160 165

Ser Thr Glu Ala Lys Gly Leu Ser Ser Glu Ser Ser Ala Ser Ser 170 175 180

Asp Gly Pro His Pro Val Ile Thr Pro Ser Arg Ala Ser Glu Ser

Ser Ala Ser Ser Asp Gly Pro His Pro Val Ile Thr Pro Ser Arg 200 205 210

Ala Ser Glu Ser Ser Ala Ser Ser Asp Gly Pro His Pro Val Ile

Thr Pro Ser Trp Ser Pro Gly Ser Asp Val Thr Leu Leu Ala Glu 230 235 240

Ala Leu Val Thr Val Thr Asn Ile Glu Val Ile Asn Cys Ser Ile  $245 \\ 250 \\ 250$ 

Thr Glu Ile Glu Thr Thr Ser Ser Ile Pro Gly Ala Ser Asp 260 Ile Asp Leu Ile Pro Thr Glu Gly Val Lys Ala Ser Ser Thr Ser Asp Pro Pro Ala Leu Pro Asp Ser Thr Glu Ala Lys Pro His Ile 295 Thr Glu Val Thr Ala Ser Ala Glu Thr Leu Ser Thr Ala Gly Thr Thr Glu Ser Ala Ala Pro His Ala Thr Val Gly Thr Pro Leu Pro Thr Asn Ser Ala Thr Glu Arg Glu Val Thr Ala Pro Gly Ala Thr Thr Leu Ser Gly Ala Leu Val Thr Val Ser Arg Asn Pro Leu Glu 350 360 Glu Thr Ser Ala Leu Ser Val Glu Thr Pro Ser Tyr Val Lys Val 365 Ser Gly Ala Ala Pro Val Ser Ile Glu Ala Gly Ser Ala Val Gly Lys Thr Thr Ser Phe Ala Gly Ser Ser Ala Ser Ser Tyr Ser Pro Ser Glu Ala Ala Leu Lys Asn Phe Thr Pro Ser Glu Thr Pro Thr 410 415 Met Asp Ile Ala Thr Lys Gly Pro Phe Pro Thr Ser Arg Asp Pro 425 430 Leu Pro Ser Val Pro Pro Thr Thr Thr Asn Ser Ser Arg Gly Thr 440 445 Asn Ser Thr Leu Ala Lys Ile Thr Thr Ser Ala Lys Thr Thr Met Lys Pro Gln Gln Pro Arg Pro Arg Leu Pro Gly Arg Gly Arg Pro

Gln Thr

<210> 514

<211> 2284

<212> DNA

<213> Homo Sapien

<400> 514

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<210> 515 <211> 431

<212> PRT

<213> Homo Sapien

<400> 515

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Ile Cys Phe Leu Thr Leu Arg Leu Ser Ala Ser Gln Asn Cys Leu 20 25 30

Lys Lys Ser Leu Glu Asp Val Val Ile Asp Ile Gln Ser Ser Leu 35 40 45

Ser Lys Gly Ile Arg Gly Asn Glu Pro Val Tyr Thr Ser Thr Gln 50 55 60

Glu Asp Cys Ile Asn Ser Cys Cys Ser Thr Lys Asn Ile Ser Gly
65 70 75

Asp Lys Ala Cys Asn Leu Met Ile Phe Asp Thr Arg Lys Thr Ala 80 85 90

Arg Gln Pro Asn Cys Tyr Leu Phe Phe Cys Pro Asn Glu Glu Ala 95 100 105

Cys Pro Leu Lys Pro Ala Lys Gly Leu Met Ser Tyr Arg Ile Ile 110 115 120

Thr Asp Phe Pro Ser Leu Thr Arg Asn Leu Pro Ser Gln Glu Leu 125 130 135

Pro Gln Glu Asp Ser Leu Leu His Gly Gln Phe Ser Gln Ala Val \$140\$ \$145\$

Thr Pro Leu Ala His His His Thr Asp Tyr Ser Lys Pro Thr Asp 155 160 165

Ile Ser Trp Arg Asp Thr Leu Ser Gln Lys Phe Gly Ser Ser Asp 170 175 180

His Leu Glu Lys Leu Phe Lys Met Asp Glu Ala Ser Ala Gln Leu 185 190 195

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Leu Ala Tyr Lys Glu Lys Gly His Ser Gln Ser Ser Gln Phe Ser
                200
Ser Asp Gln Glu Ile Ala His Leu Leu Pro Glu Asn Val Ser Ala
                215
                                    220
Leu Pro Ala Thr Val Ala Val Ala Ser Pro His Thr Thr Ser Ala
                230
                                    235
Thr Pro Lys Pro Ala Thr Leu Leu Pro Thr Asn Ala Ser Val Thr
Pro Ser Gly Thr Ser Gln Pro Gln Leu Ala Thr Thr Ala Pro Pro
Val Thr Thr Val Thr Ser Gln Pro Pro Thr Thr Leu Ile Ser Thr
                275
                                    280
Val Phe Thr Arg Ala Ala Ala Thr Leu Gln Ala Met Ala Thr Thr
                290
                                    295
Ala Val Leu Thr Thr Thr Phe Gln Ala Pro Thr Asp Ser Lys Gly
                305
                                    310
Ser Leu Glu Thr Ile Pro Phe Thr Glu Ile Ser Asn Leu Thr Leu
                320
                                    325
                                                         330
Asn Thr Gly Asn Val Tyr Asn Pro Thr Ala Leu Ser Met Ser Asn
                335
                                    340
Val Glu Ser Ser Thr Met Asn Lys Thr Ala Ser Trp Glu Gly Arg
                350
                                    355
Glu Ala Ser Pro Gly Ser Ser Gln Gly Ser Val Pro Glu Asn
                365
                                    370
Gln Tyr Gly Leu Pro Phe Glu Lys Trp Leu Leu Ile Gly Ser Leu
Leu Phe Gly Val Leu Phe Leu Val Ile Gly Leu Val Leu Leu Gly
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<210> 516

<211> 2749

<212> DNA

<213> Homo Sapien

425

<220>

<221> unsure

<222> 1869, 1887

<223> unknown base

<400> 516

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430

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cctttggaaa aaatgatgaa gaaaaccttg gctccttcct tgtctggaaa 1950
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gaccttttta taaataaaat gttcatcagc tgcataaaaa aaaaaaaaa 2749
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<sup>&</sup>lt;210> 517

<sup>&</sup>lt;211> 332

<sup>&</sup>lt;212> PRT

<sup>&</sup>lt;213> Homo Sapien

<sup>&</sup>lt;400> 517

Met Arg Leu Leu Val Leu Leu Trp Gly Cys Leu Leu Pro Gly 1 5 10 15

Tyr Glu Ala Leu Glu Gly Pro Glu Glu Ile Ser Gly Phe Glu Gly 20 25 30

Asp Thr Val Ser Leu Gln Cys Thr Tyr Arg Glu Glu Leu Arg Asp 35 40 45

His Arg Lys Tyr Trp Cys Arg Lys Gly Gly Ile Leu Phe Ser Arg 50 60

Cys Ser Gly Thr Ile Tyr Ala Glu Glu Glu Gly Gln Glu Thr Met  $\phantom{000}65\phantom{000}70\phantom{000}$ 

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Lys Gly Arg Val Ser Ile Arg Asp Ser Arg Gln Glu Leu Ser Leu
Ile Val Thr Leu Trp Asn Leu Thr Leu Gln Asp Ala Gly Glu Tyr
Trp Cys Gly Val Glu Lys Arg Gly Pro Asp Glu Ser Leu Leu Ile
Ser Leu Phe Val Phe Pro Gly Pro Cys Cys Pro Pro Ser Pro Ser
Pro Thr Phe Gln Pro Leu Ala Thr Thr Arg Leu Gln Pro Lys Ala
Lys Ala Gln Gln Thr Gln Pro Pro Gly Leu Thr Ser Pro Gly Leu
Tyr Pro Ala Ala Thr Thr Ala Lys Gln Gly Lys Thr Gly Ala Glu
Ala Pro Pro Leu Pro Gly Thr Ser Gln Tyr Gly His Glu Arg Thr
Ser Gln Tyr Thr Gly Thr Ser Pro His Pro Ala Thr Ser Pro Pro
                                    205
Ala Gly Ser Ser Arg Pro Pro Met Gln Leu Asp Ser Thr Ser Ala
Glu Asp Thr Ser Pro Ala Leu Ser Ser Gly Ser Ser Lys Pro Arg
Val Ser Ile Pro Met Val Arg Ile Leu Ala Pro Val Leu Val Leu
                245
                                    250
Leu Ser Leu Leu Ser Ala Ala Gly Leu Ile Ala Phe Cys Ser His
                260
Leu Leu Leu Trp Arg Lys Glu Ala Gln Gln Ala Thr Glu Thr Gln
Arg Asn Glu Lys Phe Trp Leu Ser Arg Leu Thr Ala Glu Glu Lys
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Glu Ala Pro Ser Gln Ala Pro Glu Gly Asp Val Ile Ser Met Pro
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Ser Ala

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<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide probe

<400> 518

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       <400> 519
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      <211> 47
      <212> DNA
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4.3
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Hand.
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4 4 11
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A=b
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i i
      ccagtgcaca gcaggcaacg aagc 24
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Heart,
June
     <211> 24
171
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<223> Synthetic oligonucleotide probe
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